The Ultimate
Canon SLR
Handbook Volume 3

Canon

CANON ZOOM LENS EF-S 18-135mm 1:3.5-5.6 IS STM

Φ67mm

EOS 760D

Master your Canon SLR today!

Welcome to your digital book

Three easy ways to read this digital edition…

Double click
to zoom

When zoomed
in, drag to pan

Click the page
to turn over

The Ultimate Canon SLR Handbook Volume 3

NEW!
220 PAGES OF PHOTO ADVICE
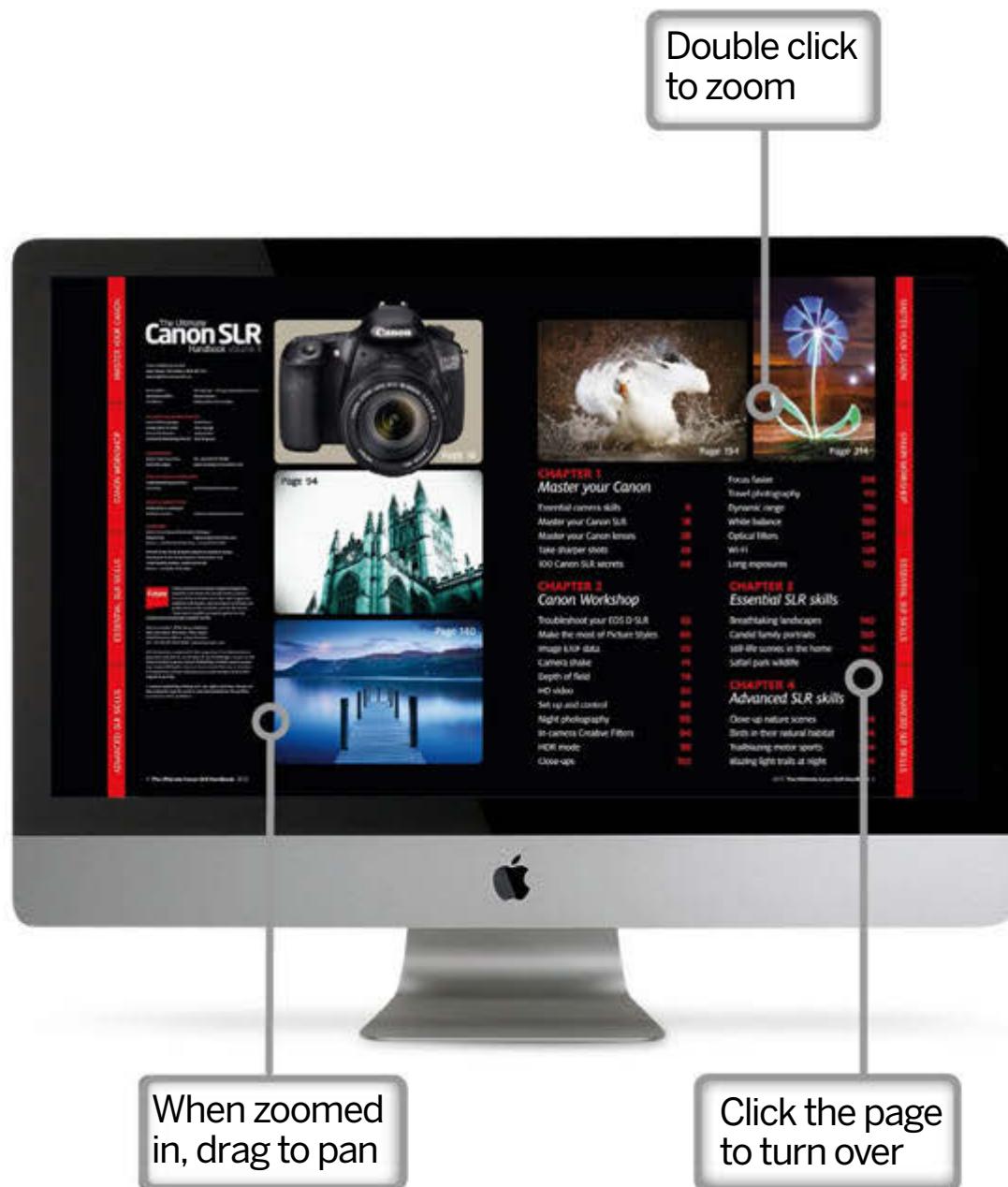
Welcome to the new *Ultimate Canon SLR Handbook: Volume 3*. In this fully updated and revised Canon D-SLR photography guide we've packed even more helpful techniques and inspirational advice. The first chapter on camera skills offers a range of tips and guides to help you master your own Canon EOS D-SLR: from basic settings and aperture and shutter speed control to focusing and lens choices.

Chapter two is our exhaustive 18-part Canon Workshop. This complete guide to photography with a Canon SLR will help you set up your camera specifically for your shooting style and needs.

In chapters three and four, we reveal how to put all of this technical know-how into practice as we follow eight top Canon pro photographers on one-to-one photography workshops with keen-but-green *PhotoPlus* magazine readers. Through these features, you can tag along and learn how to shoot everything from portraits to landscapes and sports to wildlife.

Chris

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The Ultimate
Canon SLR
Handbook Volume 3

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MASTER YOUR CANON

CANON WORKSHOP

ESSENTIAL SLR SKILLS

ADVANCED SLR SKILLS

21 TIPS!

ESSENTIAL CAMERA SKILLS

Whether you're an absolute beginner or a seasoned enthusiast, we'll help you get started on the right track with your camera

The best things come in (moderately) small packages, and if you're lucky enough to have a new Canon D-SLR, you're in for a treat. There are no fewer than four superb cameras catering to beginners, in the slinky shapes of the 1200D, 100D, 600D and 700D. More up-market 'enthusiast' models range from the venerable 60D and 7D to the power-packed 70D and the highly advanced 6D, the latter of which brings full-frame photography to the consumer market. Canon is something of a legend for keeping things as simple as possible, but any D-SLR

can be a daunting prospect for newcomers. We're here to give you a helping hand. On the following pages we'll cover the basics, from setting up your new camera kit, to making the most of simple shooting modes before progressing to more advanced techniques. Sure enough, there's a lot to learn, but the great thing is that you can start simple and get great results in next to no time, while also learning new tricks and techniques along the way. Ultimately, it should be a rewarding, enjoyable and long-lasting experience. So let's get cracking... ▶

ESSENTIAL CAMERA SKILLS

GOT A NEW D-SLR?

Essential setup advice for new cameras straight out of the box

1

What to do first!

First things first, and the best place to start is to get everything out of the box and check it's all present and correct. It's likely that there will only be minimal charge in the battery, so pop it on charge while you get a few other things sorted out. It's well worth attaching the supplied neck strap to your camera, to avoid expensive accidents later on. This is also a good time to install Canon's excellent free software onto your computer, like Digital Photo Professional for processing Raw files, and the EOS Utility program. Once the battery is fully charged, remove it from the charger and insert it into the camera's battery compartment.

The Canon 100D is an excellent first D-SLR that's small and user friendly

2

On the menu

Insert a memory card into your camera, attach the lens (see tip 5), and you're ready for the first switch-on. It's a good idea to set the time and date, because this will be recorded in the 'EXIF' information of each image. Next, press the Menu button, go to the Setup menu and select the 'Format card' option. Lift the camera to your eye, lightly press the shutter, and check that the viewfinder info looks sharp; rotate the dioptre adjuster, if necessary, to give the sharpest view.

It's a good idea to select 'Low level format', especially if the memory card has been used in another device previously

Format card

Format card
All data will be lost!

87.2 MB used   14.9 GB
☑ Low level format

Cancel   OK

Setting the scene

3

Current entry-level cameras have an on-screen features guide; enable this in the Setup menu to help you find your way around. The 100D, 600D and 700D boast a 'Scene intelligent auto' mode, signified by a green square with a + symbol. This automatically analyses compositions, and makes optimal adjustments to shooting parameters. Using the wide variety of scene modes, you can manually select anything from portraits to landscapes or sports. Better still, these so-called Basic+ modes come complete with 'Ambience' options like vivid, soft, warm and intense, available via the Q (Quick menu) button.

View and review

4

All current Canon D-SLRs have a Live View mode, which enables you to compose shots on the rear screen. The LCD is also essential for reviewing and checking your images. Press the Play button and you can scroll through the pictures you've taken. Press the magnify button to enlarge images on the screen, so you can check the sharpness in critical areas. Repeated presses of the Info button will also display a histogram (graphical representation of brightness) with a flashing highlights alert, to show where very bright parts of a picture may be washed out to white.

5

STEP BY STEP ## Fitting and changing lenses

Press the button

First, ensure that the camera is switched off. If a lens is already attached and you want to switch to another one, you'll need to press the lens release button, shown above. While keeping the button pressed in, start to gently rotate the lens anti-clockwise. You can then remove it from its bayonet-fit mount.

Keep it clean

Dust is the enemy of D-SLRs. Ideally, you should only change lenses in environmentally clean conditions that are as dust-free as possible. It helps to keep the camera's lens opening facing downwards, to avoid dust falling into the camera. Always fit a body cap to the camera if you're storing it without a lens fitted.

Lens types

Canon makes EF-S lenses for APS-C cameras and EF lenses that fit both APS-C and full-frame cameras. They use either a white square or a red circle alignment symbol respectively, which needs to be lined up with the relevant marking on your camera. Then you simply twist clockwise until the lens clicks into place. ▶

ESSENTIAL CAMERA SKILLS

KEY SETTINGS

Get to grips with your camera's main options

The Canon 700D will suit beginners, but has enough advanced options for those looking to progress their photography

6 From basic to creative

The shooting mode dial of most Canon cameras is divided into Basic Zone and Creative Zone modes. The latter is for more expert use and contains P (Program), Tv (Time value), Av (Aperture value) and M (Manual) modes. Bridging the gap between the two zones is the CA (Creative Auto) mode. In this case, the Quick menu (Q button) gives access to easily adjusting the background blur by widening or narrowing the aperture. For wider-ranging control over all available shooting attributes, switch to Program mode. A better description is 'Program shift' because, while the camera aims to serve up the ideal combination of shutter speed and aperture, you can shift the settings simply by turning the main dial, next to the shutter button.

7 The Quick menu

You'll notice that, in any of the Creative Zone shooting modes, pressing the Q button reveals many more options on the Quick menu. It's a wonderfully easy and intuitive way to alter shooting parameters, even more so in cameras like the 100D and 700D that feature touchscreen LCDs. For example, you can switch the Auto Lighting Optimizer on or off, and adjust its strength for getting a better balance between bright highlights and dark shadows. Access to picture styles like Standard, Portrait and Landscape is also useful. Unlike using scene modes, this tailors just the image style to the composition, while giving you full reign over other settings.

8 Read the meter

Exposure metering is an all-important part of successful photography. There are four different options to choose from. Evaluative metering biases the exposure to the active focus point (or points) that achieve autofocus. It therefore works well even in tricky situations, like backlit portraits. Centre-weighted metering concentrates mainly on the central region of the frame, but averages in brightness levels around the periphery. Partial metering is based solely on the central region of the frame, while Spot metering works in the same way, but only uses a relatively tiny point at the frame's centre.

9

Beat the shakes

Blurred shots from camera shake are a common problem, especially for beginners. To avoid this in handheld photography, the rule of thumb is that you need a shutter speed that's at least the reciprocal of the effective focal length. For example, at a zoom setting of 50mm on cameras that have an APS-C sensor, like the 700D, the 1.6x crop factor gives an effective focal length of 80mm. You'd therefore need a shutter speed of at least 1/80 sec for consistently sharp handheld shots. Lenses with image stabilisers help you get away with slower shutter speeds, but to freeze the action of moving subjects, you'll need faster shutter speeds. Use the Auto ISO feature or manually select a higher sensitivity if necessary, to enable sufficiently fast shutter speeds in dull lighting.

If shooting close-ups, use a tripod and focus manually, zooming in on the most important part of the image

Be more focused

10

Live View can be a big help when highly accurate focusing is required, common in close-up photography. In this case, the camera switches to contrast-detection autofocus. It's not as fast as regular phase-shift autofocus, but it's extremely accurate. For cameras with touchscreen LCDs, you can simply point to the part of the scene you want to focus on, then lightly press the shutter button to achieve autofocus. For ultra-precise focusing, it's better to focus manually and select a magnified preview to enlarge the most important part of the composition.

11 STEP BY STEP Autofocus options

Autofocus modes
The AI Focus option is pretty smart. It locks on to static objects with a light press and hold of the shutter button, but if the object begins to move, it switches to continuous autofocus to track the action. Alternative options are One Shot for completely static subjects and AI Servo for fast-moving subjects.

Multi-point AF
This engages all AF points, and the camera will generally focus on whichever area in the scene corresponds with the closest AF point, or points. In AI Servo mode, the central point is used initially, but surrounding points are engaged if the object begins to stray from the centre of the frame.

Single-point AF
When you want to focus on one particular place, like the eyes of a person in portraiture, it's better to switch to single-point AF in One Shot mode. Either use the central AF point and swivel the camera after AF has been achieved to improve composition, or pick a point that best suits the object's position. ▶
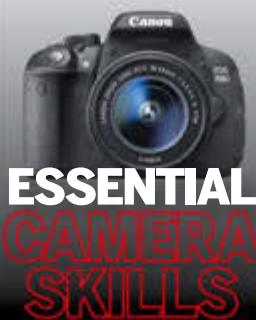
ESSENTIAL CAMERA SKILLS

MODES EXPLAINED

Understanding your D-SLR's more complex shooting modes

12

Priority modes

Metering is still automatic in aperture priority (Av) mode, but you select the aperture you want to use and the camera adjusts the shutter speed accordingly. It's vice versa for shutter priority (Tv) mode, because you set the shutter speed and the camera adjusts the aperture. Beware of a blinking aperture or shutter speed display in the viewfinder, which indicates that you've set a value outside of the range that will enable a correct exposure in the prevailing lighting conditions.

The EOS 70D has a larger body with more advanced settings for experienced Canon enthusiasts

13

Drive modes

In the Single shooting drive mode, only one shot will be taken, regardless of how long you hold down the shutter button. Continuous drive mode is often better for action sports and wildlife, and some cameras have options for fast and slow frame rates. Be aware that the memory buffer may fill up quite quickly, especially if you shoot in Raw quality mode, and you'll then have to wait for data to be written to the memory card. Other drive options include a two-second or ten-second self-timer release. A burst of shots is often also available after a self-timer delay, which is ideal for self-portraits.

Single shooting mode is best for landscapes, while Continuous suits sports and wildlife photography

Go steady

It can be notoriously difficult to get sharp images when shooting extreme close-ups or when using a very long telephoto lens, even when the camera is mounted on a tripod. Mirror bounce is the culprit. It's caused by the reflex mirror flipping up immediately prior to the exposure, which can unsettle the camera and give blurred results. 'Mirror lockup' is a neat function that's available on all current cameras apart from the 1100D. Enable this, and if you're not using a remote controller, also select a two-second self-timer delay. When you press the shutter button, the mirror will flip up, but the shutter won't open until two seconds later, giving the camera a chance to settle.

14

15

Get flash

The pop-up flash fitted to most Canon cameras is useful for adding a little fill-in illumination to brighten foreground shadows, but it lacks any real power or versatility. A proper flashgun is much more useful. A neat trick is to configure the pop-up flash to act as a wireless controller. Set this in the shooting menu's Flash Control section and switch compatible flashguns to their wireless slave mode. It's an easy, wire-free method for enabling off-camera flash, which can give a more natural look to portraits and still-life shots.

16 STEP BY STEP **Exposure compensation**

ALO off

The Auto Lighting Optimizer can help to boost shadows and reign in highlights, but can fight against any exposure compensation you apply. Canon therefore recommends switching off ALO before applying exposure compensation. Add positive compensation to brighten images, negative compensation to make them darker.

Get compensation

Exposure compensation is generally available in the Quick menu, as well as from controls on the back of the camera body. In the 70D shown here, quick access is enabled by the Quick Control dial. There's a risk of applying exposure compensation accidentally, unless you engage the underlying Lock lever.

Bracketing exposures

You can set the starting point and incremental value of exposure compensation for a series of 'exposure bracketed' shots. In this case, it's handy to also use Continuous drive mode. Hold down the shutter button on the camera or remote controller and shooting will cease after the sequence is complete. ▶

ESSENTIAL CAMERA SKILLS
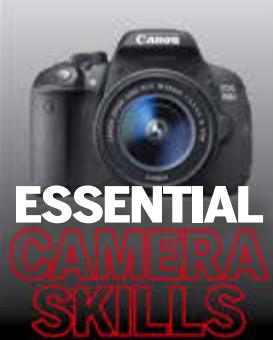
ADVANCED SKILLS

Discover how to get the most out of your Canon EOS D-SLR

17

The professional Canon 5D Mark III is a powerful 22Mp full-frame D-SLR for those who want high performance (and can afford its high price)

Switch to manual

For ultimate control over exposure settings, switch to the manual shooting mode. You can still take advantage of any of the camera's metering modes, as well as use the viewfinder's exposure level indicator as a guide. You'll definitely need to switch to manual mode when using studio flash heads. Preferred settings for this are often a shutter speed of 1/125 sec, with an aperture of around f/8. You'd then simply adjust the power of the flash heads until you achieve the correct exposure.

18

Flatter your lenses

You can counteract common lens flaws in-camera under the Lens Aberration Correction menu

Many current cameras have features that can flatter the performance of lenses. The Lens Aberration Correction option in the shooting menu includes in-camera corrections for peripheral illumination (vignetting) and chromatic aberration (colour fringing). However, these are only available for genuine Canon lenses, and you may need to download data for some lenses using the EOS Utility program. Bear in mind that if you shoot in Raw quality mode and don't process the files with Canon's own Digital Photo Professional program, corrections won't be applied. Up-market cameras often also feature AF fine-tuning for individual lenses. For example, when using a zoom lens on the 70D, you can apply two independent fine-tuning values for either end of the zoom range.

19

Filter options

You can apply an enormous range of enhancements to images when editing, but sometimes you simply can't get the effects you want without using a filter. Popular options include circular polarising filters to reduce reflections in, say, watery surfaces and windows, as well as enhancing blue skies. Neutral density filters are great for enabling wider apertures for a reduced depth of field, or slower shutter speeds to give motion blur to waterfalls and weirs. Graduated neutral density filters help to achieve a better balance between very bright skies and darker land beneath in landscape photography.

20

Depth of field

Control over depth of field can often be the making or breaking of a great shot. For example, in landscape photography, you may want the foreground and background to be simultaneously sharp. In portraiture, you'll more often want to blur a fussy background. In all cases, a shorter focusing distance will reduce the depth of field. In landscapes, it often works best to focus on a point about a third of the way into the scene. Wider apertures and longer focal lengths (eg f/5.6 at 200mm) give a reduced depth of field. Narrower apertures and short focal lengths (eg f/16 at 18mm) increase the depth of field.

21 **STEP BY STEP** High dynamic range

Scenes that contain very bright and dark areas may often exceed the dynamic range of any camera, but an HDR (high dynamic range) image can capture a full range of tones in one image. No longer do you need to create an HDR image by taking three bracketed shots then merging them into one image in software, because Canon D-SLRs, such as the 100D and 700D, have scene modes for automatically capturing HDR images. Three bracketed shots are taken, and the results are automatically merged in-camera into a single image in which low-lights are boosted and highlights are reigned in. Cameras like the 70D and 6D give you greater control over the process (see below), although only the single merged image will be saved, and you can't shoot in Raw or Raw+JPEG quality modes. To save three Raws and the merged image, you'd need to step up to a 5D Mark III.

Adjust the dynamic range
On the 70D or 6D, it's best to switch to HDR mode via the shooting menu, rather than using the Basic Zone scene mode. You'll then have full control over which camera settings are used, as well as being able to adjust parameters in the HDR capture process, including the overall dynamic range.

Continuous HDR
In '1 shot only' mode, HDR capture is limited to a single burst of three successive shutter operations, during which the bracketed exposures are captured. Normal shooting will resume thereafter. Select 'Every shot' if you wish to carry on capturing HDR images, until the feature is disabled in the main menu.

Auto image align
Enable Auto Image Align when holding the camera and shooting a sequence for HDR processing. If the camera is mounted on a tripod, it's better to disable the auto alignment feature. Resulting images may be a little cropped when using auto alignment because each shot is moved slightly when lined up. ■

Master *your* CANON SLR

We go in-depth into the controls and features of popular Canon EOS SLRs, from beginner to pro models, to help you get the very best out of *your* camera...

Master your Canon

Canon D-SLRs are wonderful pieces of photographic technology, designed to make your photography easier and more fun, and your shots better. But as EOS D-SLRs evolve, with new controls and features introduced on the latest models, so new skills and techniques are required to get the best results from them. What does this function do? How do I set that? Why are my exposures like that when I

want them like this? The questions we receive from *Photo Masterclass* readers every day tell us that while you love shooting with your Canon D-SLR, you just wish that you knew how to use it to its full potential. We also recognise that, while we work hard to ensure that 95% of the Canon camera skills we feature will be relevant to the vast majority of users, it's obviously not possible for us to show how to change certain settings on five, ten or 20 different

EOS D-SLRs – so in this feature we're providing you with camera tips and techniques that are 100% relevant to your Canon D-SLR! We've included camera-specific set-up and shooting tips for the most popular EOS cameras both old and new, from the 1100D and 100D, the 400D to the 700D, the 40D to the 70D, and 6D, 7D and 5D Mk III. Equipped with our guide, we guarantee that you'll be able to get even more from *your* Canon camera… ▶

16 CANON D-SLRS FEATURED!

Master your Canon

Beginner EOS D-SLRs

CANON EOS 1100D Rebel T3

Canon's absolute-beginner D-SLR may be nearly three years old, but it's still a brilliantly simple camera, and ideal for those taking their first steps in 'proper' photography – and its budget price has never been better, at around £280 for the body only. Here are five ways to get more from your 1100D…

2 RAW+JPEG
The 1100D may be the most basic EOS, but it still has lots of advanced features, such as the option to shoot Raw and JPEG at the same time – this enables you to share shots fast, but still have maximum flexibility for later editing.

3 Creative Auto
Not quite ready for the Priority or Manual modes? Try Creative Auto mode. This is a step up from the full auto (green) mode, and enables you to take control over depth of field (the 'background blur'), flash, brightness and other settings.

1 Central AF point
If the camera's struggling to focus, select the central AF point manually. This is a 'cross-type' point, meaning it's sensitive to both horizontal and vertical contrast lines, so is more likely to lock on to a subject in tricky conditions.

4 SET button
As with more advanced EOS cameras, the SET button can be customised to control a frequently used function – you can use it for quick access to useful features such as depth-of-field preview or flash exposure compensation.

5 What's this?
If you're wondering what this little mark on your 1100D is, it's the Focal Plane Indicator. The front of the imaging sensor lies along this line, and it enables you to measure the distance to a subject precisely, which is useful for macro work.

5 hints & tips

Canon EOS 400D Rebel XTi

1 SHORTER SELF-TIMER
Press the button shown above to access the self-timer function. It's a standard 10 seconds on the 400D; for a two-second timer, you need to activate the Mirror Lockup function first (Custom Function VII).

2 FLASH MODELLING
When you have a Speedlite attached to the 400D, the depth-of-field preview button on the front of the camera becomes a flash modelling trigger: press it and the flash pulses rapidly, enabling you to assess where the shadows will fall.

3 PICTURE STYLES
You can download more Picture Styles to use in your 400D (or in Canon's Digital Photo Professional software that came with your camera). Head to http://web.canon.jp/imaging/picturestyle/file/index.html for the full set.

4 EXTENDED COMPENSATION
You can set +/–2 stops of exposure compensation via the dedicated button. If this isn't enough, take a meter reading, then switch to manual mode and apply compensation by changing the aperture/shutter speed.

5 AUTO DEPTH AE
In A-DEP mode, the camera adjusts the aperture to maximise the depth of field – but note that this won't work if you're using flash. Attach a Speedlite, or use the pop-up flash, and the camera will default to Program mode.

Beginner EOS D-SLRs

CANON EOS 100D Rebel SL1

Canon's new baby is also the world's smallest and lightest D-SLR, making it a camera you'll never want to leave at home. But don't let its size fool you – inside its grippy little body is packed an amazing array of tech including an 18Mp sensor, an ISO range of 100-12800, a touchscreen and all-new Scene modes. Just be aware that it suits those with smaller budgets *and* smaller hands, and larger lenses dwarf its diminutive body. Here are five tips for the 100D...

1 Crop shots in-camera

You can crop images in-camera using the touchscreen (while preserving the uncropped shot), so more of your photos will be ready to share straight from the camera. And the 100D is 18Mp, so you've got plenty of scope for cropping while still being left with good-size images.

2 New mode dial

The ergonomic mode dial isn't just easier to adjust – it's also less cluttered than on the 1100D, with several of the Scene modes tucked away under a SCN option; select this, then choose a mode using the touchscreen LCD.

3 New Scene modes

The 100D gets three new Scene modes: Kids, Food and Candlelight. All three are ideal for family occasions – so you can spend more time snapping away, with less risk of missing a shot while you work out what settings to use.

4 Shoot one-handed!

As well as a clean button layout, Canon has put a lot of thought into the 100D's front grip. It fits your right hand nicely, and with the 100D being so small and light you can easily shoot one-handed with a good degree of accuracy.

5 Self-timer drive modes

As well as 2- and 10-sec self-timers there's also a Continuous mode. Press the shutter button, and after a 10-sec countdown, the 100D can be set to take between two and ten shots continuously. Great for taking a family portrait with yourself in it!

5 hints & tips

Canon EOS 450D Rebel XSi

1 IMPROVE TONES

Enable the Highlight Tone Priority setting – hidden away on the 450D in Custom Function II: 5 – to improve and brighten highlight details. But bear in mind that noise in darker shadowy areas of your shots might well increase.

2 FASTER SHOOTING

If you're using a high ISO setting to photograph sports or action and you find that the camera's stuttering when taking bursts of shots, go to Custom Function II: 4 and switch off the High ISO speed noise reduction.

3 AE LOCK

By default, this button locks the current exposure setting. But did you know that you can shift the aperture (in Av mode) or shutter speed (in Tv mode), and the camera will adjust the opposite setting to retain the same exposure?

4 WB BRACKETING

In the second red Shooting menu you'll find WB SHIFT/ BKT. The white balance bracketing option is useful when you're shooting JPEGs in tricky lighting: for each picture taken, the camera saves three different versions.

5 A-DEP MODE

Useful for landscape shots, this mode automatically sets an aperture that gives enough depth of field to keep both close and distant subjects sharp. Just ensure that all elements you want to be in focus are covered by an AF point. ▶

Beginner EOS D-SLRs

CANON EOS 600D Rebel T3i

The 600D is a popular camera that has been retained in Canon's line-up while the 650D hasn't, being superseded by the 700D (see the facing page) – and it's cheap at only £500 with an EF-S 18-55mm kit lens. It comes with the Basic+ mode, creative filters, Vari-angle flip-out LCD screen, 18Mp sensor, 3.7fps and built-in wireless flash control. Here are five tips for using your 600D...

2 Wireless flash
Open up a whole world of flash photography possibilities by using the 600D's wireless flash functionality. You can easily fire and control flashguns remotely, firing them with or without your 600D's built-in flash.

3 Flash sync. speed
When shooting in Av mode, if your indoor portraits are blurred when the flash pops up, it's because the resulting shutter speed is too slow. Fix this in Custom Function I: 3 to ensure the flash sync. speed stays between 1/200-1/60 sec.

1 Big LCD = easy control
Use the 600D's big, clear 1,040k vari-angle 3-inch screen when adjusting settings from aperture and shutter speed to exposure compensation. In aperture priority (Av) mode, your shutter speed will change as you apply exposure compensation; in shutter priority (Tv) mode the aperture will be altered.

4 Scene Intelligent Auto mode (A+)
This clever automatic shooting mode analyses the scene you're shooting in detail, and picks the right settings – such as AWB, AE, Auto Lighting Optimizer and Auto Picture Styles – for the best result.

5 Creative Filters
Introduced with the 600D and 60D, Creative Filter effects can be applied in-camera to images post-capture to give them a stylised look. Effects include Toy Camera, Miniature, Grainy Black & White and Fisheye.

5 hints & tips

Canon EOS 500D Rebel T1i

1 AUTO ISO
The 500D's Auto ISO function doesn't drop below ISO400 in manual mode, so you'll have to select lower ISOs manually. No great shakes – you're shooting with full manual control after all – although it's easy to forget to do it!

2 FLASH OFF MODE
If you regularly shoot in Auto mode, but you're in a location where flash photography is prohibited, turn the shooting mode dial to the Flash off setting; your camera will increase the ISO to compensate for the low lighting.

3 LIVE VIEW ZOOM
When using Live View, you can magnify the image to check the focus before you take a shot. Use the arrow keys to move the rectangle to any area you want to zoom in on, then press the magnify button for a 5x view, then a 10x view.
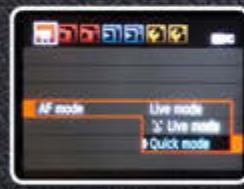
4 FASTER AF
Live mode autofocus is the default for video recording, and offers quieter but slower focusing. If you need speed, switch to Quick mode. It's noisier though, as the mirror needs to flip down (and it momentarily blocks your view).

5 LEVEL HORIZONS
If you're composing a shot through the viewfinder rather than using Live View, you can check that your images are level by lining up the horizon or other horizontal features with the edges of the AF points in the centre of the frame.

Beginner EOS D-SLRs

CANON EOS 700D Rebel T5i

Although not a huge update on the excellent 650D, the 700D is still a great camera for those who want more functionality and power from their first Canon D-SLR. Along with an 18Mp Hybrid CMOS AF sensor and 3-inch touchscreen, you get a Digic 5 processor and ISO that's expandable to 25600, plus a 5fps burst rate. Here are five tips for using your 700D...

1 Auto Picture Style
By not necessarily choosing Portrait for portraits, or Landscape for landscapes, this Auto option is good for capturing the best colours. Shoot JPEGs and the Picture Style can't be changed post-shot; shoot Raw and you can change it in Canon's DPP software.

2 Vari-angle screen
The fold-out 1,040k LCD on the 700D is great for self-portraits, shooting low to the ground or above your head, and for shooting videos – but remember to turn the screen around when folding it away for added protection.

4 Touchscreen control
As well as enabling you to quickly adjust settings and swipe through images in Playback mode, you can use Touch AF mode to focus on a point in a scene by touching the screen, or Touch Shutter mode to both focus and fire the shutter.

3 Extra Scene modes
New to the 650D and retained in the 700D, these include Handheld Night Scene, which takes multiple images at fast shutter speeds and blends them, and HDR Backlight Control, which captures and blends three bracketed exposures.

5 Rate images in-camera
In-camera rating enables you to sort the wheat from the chaff during a break in shooting. The ratings are recognised by Elements' Organiser and Adobe Bridge as well as DPP, so you can spend less time assessing shots on your computer.

5 hints & tips

Canon EOS 650D Rebel T4i

1 NOSE PROBLEM
If you've activated the touchscreen in the 'Q' menus, the LCD won't be turned off when you raise the camera to your eye, so you could change settings accidentally with your nose! Switch off the LCD by pressing INFO.

2 BETTER AUDIO
The 650D has continuous focus for shooting video, but the noise made by the focusing motor can be picked up by the onboard stereo microphones. For audio that matches the quality of the pictures, use an external mic.

3 HIGH ISO NR
New to the 650D, Multi Shot Noise Reduction combines four consecutive shots to create 'one low-noise image'. We find this works very well at reducing unwanted noise even in images shot at ISO12800 and 25600.

4 MOVIE SERVO AF
The autofocus is set to Continuous by default when in Movie mode. As well as tapping the icon on screen to switch this feature off if you want to focus manually, you can disable the setting in the Live View shooting menu.

5 AUTO ISO
If you select Auto ISO the camera won't select an ISO higher than ISO6400, to ensure the best image quality. If you want a higher sensitivity, to enable you to use a faster shutter speed or narrower aperture, you'll have to set it manually. ▶

Enthusiast EOS D-SLRs

CANON EOS 60D

The stalwart, three-year-old 60D still retains its place in Canon's line-up in the 'larger' enthusiast D-SLR bracket – and with a 60D body now costing just £570 it's a real steal, and a worthy upgrade from older, smaller EOS cameras. Enjoy the sturdier body, which feels well balanced with bigger EF lenses, along with a rear dial for setting AF points and adjusting apertures, and capture great exposures thanks to the iFCL metering system. Here are five tips for getting more from your 60D…

1 Raw processing

Do you want to see how an image would look with a different colour treatment, but don't want to wait until you've download it to your computer? You can process your .CR2 Raw files in-camera – just head for the bottom of the first Playback menu.

2 Electronic level

Like the 7D, the 60D features a handy rear screen level to help you keep your horizons horizontal; press the INFO button twice to see it. You can also call up a more basic level in the viewfinder, and on the top-plate LCD.

4 SET button

Custom Function IV: 2 enables you to assign a shooting function to the SET button. However, this won't work if the control pad has been set to Manual AF Point Selection using Custom Function III: 2 (AF point selection method).

3 Maximum ISO

The automatic ISO function offers you a balance between versatility and quality, because you can set a maximum ISO from the standard ISO range up to 6400 – it won't let you select 12800 from the expanded ISO settings.

5 Rating

Hit the Q button during playback, then use the menu to assign a star rating to your images. These ratings are carried over to Digital Photo Professional, Adobe Bridge and Adobe Lightroom, making it easy to find your best shots.

5 hints & tips

Canon EOS 40D

1 QUICK CONTROL
This is an easy one to miss, but make sure the power switch points to the white line above On and Off in order to activate the Quick Control dial. You'll then be able to make quick adjustments to exposure settings by turning the dial.

2 HIGHLIGHT TONE PRIORITY
If you can't select ISO100 or 3200, it's because you have Highlight Tone Priority (HTP) activated (the '0's in the ISO readout will also be displayed as lower-case 'o's). You can disable HTP in Custom Function II: 3.

3 BETTER ISO SPEED
Press the ISO button and rotate the control dial to the left to enable this in P, Av, Tv, M and A-DEP modes. ISO is automatically set from 100 to 800, enabling you to use faster shutter speeds to minimise camera shake as light levels drop.

4 LIVE VIEW
You'll need to enable Live View shooting (in the second yellow menu) before you can use the SET button to select it. If you don't, the SET button will perform a different function, as assigned in Custom Function IV: 3.

5 FLASH COMPENSATION
By pressing the ISO/flash metering button and turning the Quick Control dial, you can set -2 stops to +2 stops of compensation for the 40D's flash, for more subtle or stronger illumination of a subject.

Enthusiast EOS D-SLRs

CANON EOS 70D

Hotly anticipated throughout the Canon D-SLR community, the all-new enthusiast-level EOS 70D went on sale in October. It's a cleverly designed and well-specced camera, with lots of new features to keep experienced enthusiasts engrossed: a new 20Mp CMOS sensor, 19-point AF system, Digic 5+ processor, ISO25600 expanded, 7fps, and improved Live View focusing and shooting. Here are five cool new functions on the 70D…

1 Intelligent viewfinder level

Like in Live View, the 70D's viewfinder can tell you when its level. On older D-SLRs this is activated via the AF point display, but it switches off when you press the shutter button. The old method is still there, but the 70D displays an icon at the bottom of the viewfinder, which stays visible even when the shutter button is pressed.

2 Simplified AF choices

The 70D has 19 cross-type AF points and three selection modes – Single point, Zone and 19-point Area – set via a dedicated button next to the shutter button, enabling quick selection without your having to take the camera from your eye.

4 Live View focusing

The 70D's new Dual Pixel CMOS AF sensor-based phase-detection technology provides smooth, high-performance focus tracking for shooting home movies, as well as fast AF when shooting stills and focusing using Live View.

3 AEB and exposure compensation

The 70D offers a generous +/-5 stops of exposure compensation, in 1/3 or 1/2-stop increments. This can be combined with exposure bracketing to capture high-contrast scenes in an HDR image.

5 Silent driving!

The 70D features a new Silent drive mode, which is ideal for situations where you need to keep noise to a minimum but need to use the 7fps Continuous shooting mode – for example at weddings in churches or when shooting shy wildlife.

5 hints & tips

Canon EOS 50D

1 H1/H2 ISO

To use sensitivity settings above ISO3200 you'll need to activate ISO Expansion. Turn the dial until either H1 is displayed in the top LCD (for ISO6400) or H2 (for ISO12800). The resulting shots will contain quite a bit of noise, though.

2 SMALL RAWS

The 50D introduced reduced-resolution Raw files. These can save space on both your memory card and your computer, but still provide the flexible editing of full-res Raw files. Useful if you only upload to the web or print small pictures.

3 QUICK CONTROL

The 50D features a Quick Control screen, although instead of pressing a Q button you use the Multi-controller. If it's not working, it's likely that the controller has been set to select the AF point directly in Custom Function III: 3.

4 FUNC. BUTTON

Like the SET button, the 50D's FUNC button can be assigned to a frequently used function via Custom Function IV: 7. It adjusts the brightness of the LCD by default, but can give you access to Live View functions or bracketing.

5 CUSTOM MODES

The 50D offers two Custom mode settings – C1 and C2 – which enable you to preset many of the camera functions. The 40D offers one more Custom mode, but this is replaced by the Creative Auto setting on the 50D's dial. ▶

CANON WORKSHOP

ESSENTIAL SLR SKILLS

ADVANCED SLR SKILLS

Enthusiast EOS D-SLRs

CANON EOS 7D

Canon's sporty workhorse D-SLR, the 7D, was launched back in mid-2009, but it's still going strong, thanks to almost future-proof specs and a firmware update that included increasing Raw image output from 16 to 25 in 8fps Continuous drive mode. Dual Digic 4 processors and an 18Mp sensor combine for fast burst shooting and fast buffer clearance, while its responsive AF system is fast and accurate when using Canon's EF L-series lenses. Here are five tips for maximising the 7D's potential…

1 Back button focus
For a fast, sporty number like the 7D, being able to isolate focusing with a rear button (rather than the shutter button) will speed up your shooting, because you're not being delayed waiting for the camera to achieve focus after you press the shutter button – which can cause you to miss shots of active subjects.

2 AF point selection
Like the 70D, the 7D has the Single point AF, Zone AF and 19-point Area AF point options, but there's also Spot AF for ultra-precise still-life focusing, and AF Point Expansion, which activates AF points adjacent to the selected point.

4 Update 7D firmware
Upgrade to firmware 2.0.3 for improved max burst for 25 Raws, plus in-camera Raw image editing, image rating and JPEG resizing and more. Use the EOS Utility software, connect your 7D to your computer, and go to http://bit.ly/7dfirmware.

3 Forced AF-assist
If you're shooting in low-light conditions using Program, aperture priority, shutter priority or manual modes and autofocus is struggling, manually pop up the built-in flash unit to use it as an AF-assist lamp.

5 Wireless flash
You can fire and control wireless flashguns remotely using your 7D's built-in Speedlite transmitter. You can use the camera's built-in flash at the same time, although this won't have as much power as when it's fired alone.

5 hints & tips
Canon EOS 6D

1 VIEWFINDER LIMIT
Unlike the 5D Mk III, the 6D doesn't show 100% of the image through the viewfinder – it covers 97% of the frame. Try zooming out slightly before you take a shot to check for any distractions around the edges of the image.

2 WI-FI CONNECTION
You can use Canon's EOS Remote smartphone app to control the 6D over Wi-Fi. If you're away from home (which is likely), set this connection to Camera Access Point mode, which will enable you to connect the phone and 6D directly.

3 GPS & BATTERY
The built-in GPS enables you to geotag locations as you take pictures, but it can drain the camera battery. Consider switching its logging frequency to five minutes if you don't need a step-by-step record of your shoot.

4 IN-CAMERA RAW PROCESSING
The 6D enables you to make basic edits to Raw images via the in-camera menu. The processed image is saved as a JPEG, so you can have more images ready to share straight from the camera.

5 LIVE VIEW
You can stream movies and photos through compatible devices such as TVs and media players. Your camera can also display its Live View image this way, but Canon advises that Live View mode is switched off as it 'may not be accurate'.

Professional EOS D-SLRs

CANON EOS 5D Mk III

One of Canon's most popular D-SLRs, the 5D Mk III still regularly tops the best-seller lists. This smaller (than a 1D series) full-frame camera has it all, with its 22Mp sensor, exceptional image quality even at high ISOs, 61-point AF and 6fps burst rate…

1 In-camera HDR
The 5D Mk III has the best in-camera HDR functionality of all the EOS range, because it captures three bracketed Raw images and also saves the merged HDR image as a JPEG. It's best used for static subjects to enable the Auto Image Align feature to align the images.
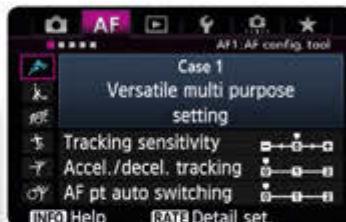
2 AI Servo AF characteristics
On the 5D Mk III you can fine-tune the AI Servo AF settings to suit different subjects. There are six preset 'cases' to choose from, and you can tweak the parameters for these for even better performance.

3 Dual-image display
In Playback mode, pressing the Creative Photo (pen on a square icon) button displays two images side-by-side, enabling you to quickly compare similar images. You can also view one shot at 100% with the other fitting the screen.
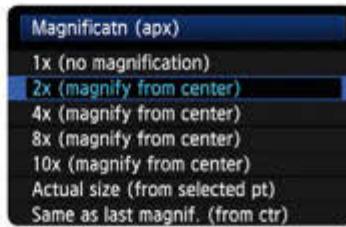
4 Playback magnification
You can customise how images are magnified when you review them to speed up image checking mid-shoot. We like the 'Actual size (from selected pt)' option, which zooms in to 100% on the area the active AF point is focused on.
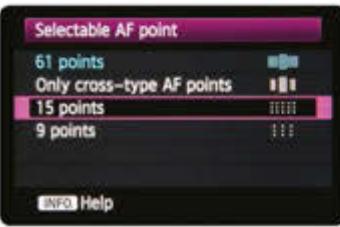
5 Autofocus points
If you're a little fazed by having all 61 AF points available for selection, consider switching to 15 points. This offers a good compromise between coverage across the frame and the speed at which you can shift the active point.

5 hints & tips
Canon EOS 5D Mk II

1 BETTER AUDIO
Use the 5D Mk II's 3.5mm stereo jack input to attach an external microphone. This will give you much better sound quality for video recording than the built-in mono mic, and won't pick up the sound of the camera being operated.

2 ZOOMING IN
If you want to zoom in while you're recording video, make sure you're using a lens that has a fixed maximum aperture – if you use a lens with a floating aperture (such as f/4-5.6), the exposure will change as you zoom.

3 CHECK THE EDGE
The 5D Mk II's viewfinder shows 'just' 98% of the image, while Live View gives you 100% coverage of the picture. Switch to Live View shooting if you want to make sure there are no unwanted elements at the edges of the frame.

4 MOVIE SETTINGS
For the most 'film-like' movies, make sure you're shooting at the 1920x1080 24p quality setting. To check this, go to the Live View menu and scroll down to 'Movie rec. size'. Press SET to activate this, and to make any changes.

5 LIVE VIEW SETUP
When you're using Live View at night, you may find that the camera automatically sets a high ISO, even though you've manually set a low one. This happens when you have Live View set to 'Stills+movie' – change this to 'stills only' instead. ◼

Master your Canon

40 LENS TIPS
- ✔ WIDE-ANGLE
- ✔ MACRO & PRIME
- ✔ STANDARD ZOOM
- ✔ TELEPHOTO ZOOM
- ✔ TILT-SHIFT & FISHEYE

MASTER YOUR...

CANON LENSES

40 top tips and techniques to get the most out of your Canon D-SLR lenses, including essential lens-buying advice and the best lens choices

The major plus point of owning a D-SLR over a point-and-shoot camera is being able to switch lenses to suit your subjects, rather than making a hash of it with a fixed lens on your compact that might not be wide enough or long enough, or fast enough, or sharp enough... but there are hundreds of different lenses available for your Canon D-SLR (at the last count, just over 140 lenses) and knowing which lenses are best for your particular needs, and then working out

how to actually use them properly, can baffle even the most dedicated enthusiast photographer.

Over the following ten pages we have compiled no fewer than 40 top tips for getting the very best from your Canon lenses (note that when we say 'Canon' lens, we mean 'Canon-fit', so that also includes popular third-party branded lenses such as those made by Sigma, Tamron and Tokina). And we guarantee that following our advice will see you start taking better

shots with your D-SLR and lenses in no time at all!

From standard and wide-angle zooms to primes and macro lenses, from telephoto and superzooms to specialist fisheye and tilt-shift lenses, we cover every type of lens, and explain the best techniques for using them. Plus we share our buying wisdom so you know what to look out for, and provide a list of the very best lenses in each category to consider when you're upgrading... ▶

Master your Canon

STANDARD &
WIDE-ANGLE ZOOMS

Get the most from shorter zoom lenses and take a wider view
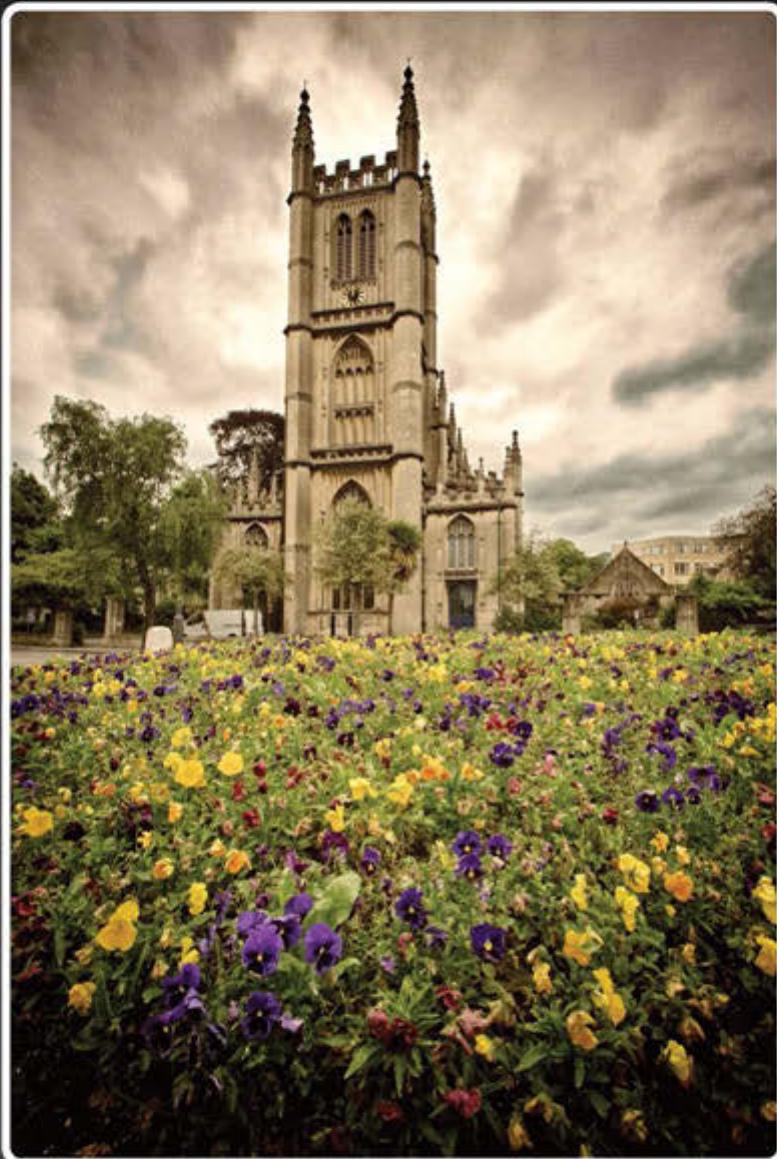
1 Avoid converging verticals of buildings

Wide-angle lenses enable you to squeeze more of a scene into a single frame, but you'll need to be close to subjects in order to make them appear large enough. This can cause problems when you're shooting architecture; if you point a wide-angle lens upwards when you're standing close to a building you'll end up with converging verticals, where the top appears much narrower than the base. You can use this effect creatively to make structures appear distorted. Alternatively, stand further away and zoom in, use a tilt-shift lens (see p36) or fix the verticals in Photoshop.

2 Watch the corners

Not all Canon cameras show the whole picture through the viewfinder. The 700D, for instance, shows 95% of the area being captured, so it's all-too easy to find that unwanted elements have crept into the corners of the frame when you check your pictures. It can be straightforward to crop the image or clone the distractions out in software, but why not fix it at the time of shooting? Zoom out slightly before you take the shot and glance around the edge of the frame before zooming in again. Another easy solution is to use Live View, because this shows the full image from the camera sensor, although it can be tricky to fine-tune composition in handheld shooting.

3 Take sharper shots

Affordable standard zooms tend to have slow maximum apertures, such as f/5.6 or f/6.3. This means that for a given focal length they let in less light than a zoom with a fast maximum aperture, such as f/2.8. There's a risk that pictures will be blurred in low light or when you're photographing moving subjects, so increase the ISO to compensate (or let your camera handle this by choosing the Auto ISO setting). It's definitely worth buying a walkaround lens with Image Stabilization, if you can stretch to it.
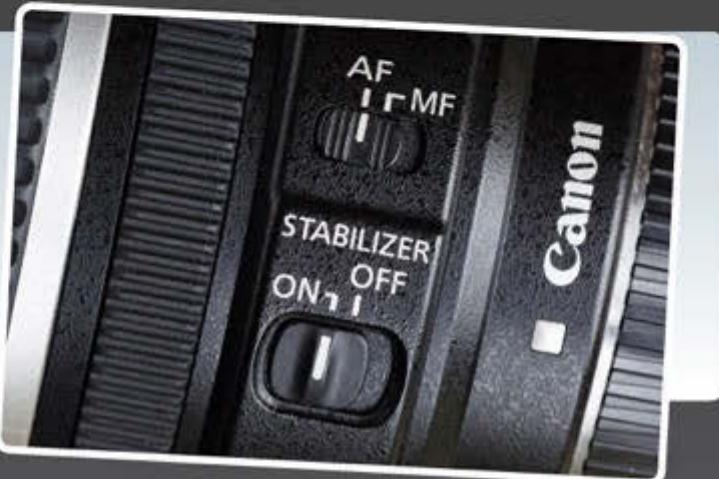
4 Hyperfocal distance

Landscape photographers frequently make use of the hyperfocal distance when using a wide-angle lens. The hyperfocal distance is the shortest focus distance at which everything, from close-range to infinity, will appear sharp. The setting you need to use changes according to a complicated formula that depends on the focal length of the lens, the aperture and even the size of the camera's imaging sensor, but there are many smartphone apps available that calculate the hyperfocal distance for you once you've tapped in all the necessary info. Simply manually focus the lens at this distance to maximise the depth of field.

5 Use Lens Correction

Squeezing a range of focal lengths into a single lens means that compromises have to be made in its design, and zoom lenses can show considerable amounts of distortion. However, software can correct for the likes of bowed horizons and chromatic aberration (red and green haloes around high-contrast edges). We recommend shooting Raw files and then using the Lens Corrections feature in Adobe Camera Raw. You can let the software do the corrections automatically (based on predetermined lens profiles) or carry out a manual correction using the sophisticated tools available.

UNCORRECTED

CORRECTED

Six of the best...
Kit lens upgrades

● Tamron 17-50mm f/2.8 XR Di II VC	£350
● Canon EF-S 15-85mm f/3.5-5.6 IS USM	£550
● Sigma 24-70mm f/2.8 EX DG HSM	£600
● Canon EF-S 17-55mm f/2.8 IS USM	£550
● Tamron 24-70mm f/2.8 Di VC USD	£640

Money no object?

● Canon EF 24-70mm f/2.8L II USM	£1,550

BUYING ADVICE

What to consider when buying one of these lenses...

6 EF-S vs EF
Canon makes lenses in two mounts. EF-S lenses are engineered to only work on cameras with APS-C-sized sensors (so, everything bar the full-frame EOS 6D, 5D and 1D bodies). If you're thinking of going full-frame in the future, consider EF lenses because these are compatible with all Canon D-SLRs.

7 Distance scale
Not all wide-angle lenses have a focus distance scale printed on the lens barrel, but it's something to look for if you plan on doing lots of landscape photography. The scale will enable you to set the hyperfocal distance accurately – something you'll have to estimate with lenses that lack it.

8 Close focusing
Some zoom lenses are marked as having a 'macro' function, but this is really just a marketing gimmick to indicate that they can focus *fairly* close. For true 1:1 life-size photography you'll need to buy a dedicated macro lens (see p36).

9 Filter compatibility
If you want to add a filter to the front of the lens, check the front of the lens barrel. You'll find the diameter of the filter thread detailed here. Standard lenses tend to have smaller filter threads, so if your filters are too large for the lens, buy step-up adaptors.

10 Focal length
Ultra-wide zooms cover a range of focal lengths, but it's the shortest focal length that you should be guided by. Chances are, once you're bitten by the UWA bug, you'll predominantly use it at its widest setting. In the EF-S mount consider lenses that start in the region of 10mm – every millimetre makes a huge difference at the wide end. ▶

11 Focus accurately

The wide maximum apertures offered by prime lenses enable you to work with a very shallow depth of field. This is a trait that you can exploit when shooting a portrait, allowing you to create a margarine-smooth background that doesn't detract from the subject. However, accurate focusing can be difficult when working at the very wide apertures of f/1.4 and f/1.8 typically offered by 50mm and 85mm lenses. If you want to make sure your model's eyes are sharp, select One Shot AF and manually select a single AF point that's positioned over the nearest eye.

Lens: Canon EF 70-200mm f/2.8L IS II USM
Exposure: 1/800 sec at f/5; ISO200

PRIME LENSES

From wide-angle to super-telephoto, lenses with fixed focal lengths offer superb quality

12 Freeze action

Typically, primes are 'fast' lenses. This doesn't mean they necessarily focus faster, but rather that they enable the use of faster shutter speeds thanks to their wider maximum apertures. For instance, the widest aperture you can select at 50mm on a Canon 18-55mm kit zoom is f/5.6. However, the widest aperture available on Canon's 50mm f/1.4 prime lens is four stops faster. That makes a massive difference to getting a blurred shot or a sharp one; if an aperture of f/5.6 gives a shutter speed of 1/50 sec, then the f/1.4 aperture would give a shutter speed of 1/800 sec in the same situation.

f/5.6

f/1.4

13 Control the aperture

The choice of aperture has a big effect on the depth of field – or the amount of front-to-back sharpness there is in an image. Wider apertures (such as f/2.8) reduce the depth of field, while narrower apertures (such as f/22) increase it. You'll want precise control over the depth of field when you're using a fast prime lens, so set the camera to aperture priority (Av) mode. Press your camera's depth-of-field preview button as you change the aperture to see the effect it has on the image displayed in the viewfinder.

14 Fit a neutral density filter

Using the widest aperture on a fast prime lens can lead to over-exposed pictures in bright conditions. The reason for this is that the shutter speed required to make a normal exposure at this aperture may be faster than the camera's fastest setting (such as 1/8000 sec on a 70D). To get around this, you can fit a neutral density (ND) filter to the front of the lens to reduce the amount of light available, bringing the shutter speed back within the camera's available range. A variable ND filter can be a useful gadget if you shoot video, enabling you to adjust the strength of the effect as the light changes.

NO ND FILTER

ND FILTER

Six of the best...
Prime lenses

● Canon EF 50mm f/1.4 USM	£280
● Canon EF 85mm f/1.8 USM	£300
● Sigma 15mm f/2.8 EX DG Diagonal Fisheye	£490
● Canon EF 300mm f/4L IS USM	£1,100
● Zeiss Distagon T* 18mm f/3.5 ZE	£870

Money no object?

● Canon EF 300mm f/2.8L IS II USM	£5,150

15 Zoom with your feet

Prime lenses offer a single focal length; they don't zoom, so you'll have to work harder to compose shots. However, that also makes them excellent tools for learning the art of composition – if you're new to photography, cheap prime lenses such as Canon's 50mm f/1.4 and f/1.8 are an excellent investment. The shallow depth of field offered by these lenses can be used as a compositional device too, allowing you to blur distractions and selectively focus to highlight a key feature of the scene.

Lens: Canon EF 50mm f/1.8 II
Exposure: 1/30 sec at f/10; ISO100

BUYING ADVICE

What to consider when buying one of these lenses...

16 Maximum aperture
Wider apertures let in more light, enabling faster shutter speeds and shallower depth of field – but they come with a price tag. Canon's entry-level 50mm f/1.8 'nifty fifty' costs around £90, while the f/1.4 version – at two-thirds of a stop faster – is almost £300. The top-end f/1.2 version costs over £1,200.

17 Filter thread
The front element and filter thread of a fast prime lens often has a large diameter. This is something to bear in mind if you've already amassed a large collection of filters. You may need to upgrade them, and larger filters are more expensive.

18 Factor in sensor size
APS-C sensors are exposed to a smaller portion of the image projected by a lens. Multiply the lens focal length by 1.6 for the 'effective' focal length (EFL). This is good news for wildlife (a 400mm lens offers an EFL of 640mm) but bad news for landscapes (a 24mm lens offers an EFL of 39mm).
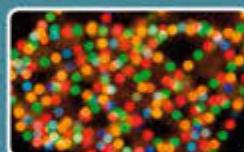
19 Aperture blades
Lenses with more aperture blades usually produce better 'bokeh' (out-of-focus areas) because the lens opening is more rounded. This is why highlights captured with a Canon EF 50mm f/1.4 USM (8 blades) look smoother than those captured with the Canon EF 50mm f/1.8 II (5 blades).

20 Manual override
Look for a prime lens that offers full-time manual focusing, such as one fitted with Canon's Ultrasonic motor (USM). This will enable you to fine-tune the focus point even when the camera's using autofocus, which comes in very handy when you're working with a particularly shallow depth of field. ▶

TELEPHOTOS & SUPERZOOMS

To get close to the action, you'll need a longer lens

21 Banish dark corners

All lenses have a degree of corner darkening, although you may only notice it when the background is light in tone. Fast zooms and prime lenses used at their widest aperture settings are particularly prone to the effect. However, there are a variety of ways in which you can reduce the problem. Choosing a narrower aperture can remove the worst. Activate the Peripheral Illumination Correction function of your EOS camera to brighten up the corners at the time of shooting, or shoot Raw and use the vignette reduction tools available in Adobe Camera Raw or DPP.

22 Compress perspective

Telephoto lenses 'compress' a scene (although it's really down to the distance you're shooting at rather than the focal length itself), which makes foreground and background elements appear closer than they are in reality. You can use this to make hills and mountain ranges look densely packed together, or to make the buildings in a city appear stacked in each other's shadow. The only thing to be aware of is that telephoto lenses have a shallower depth of field than standard or wider lenses; this is useful for creating a blurred background in a portrait, but it makes things difficult when you want to keep every 'layer' in a scene sharp (see detail).

BUYING ADVICE

What to consider when buying one of these lenses...

23 Floating aperture

Telephoto zooms that have a fixed aperture, such as a 70-200mm f/2.8 lens, can be very expensive. A more affordable option is a zoom with a 'floating' aperture (such as f/5-6.3), where the aperture gets smaller as you zoom into a scene, meaning less light makes it through to the camera sensor.

24 How long?

The barrels of superzooms and some super-telephoto lenses can extend quite far at full zoom. This can make them a little unwieldy, particularly in the case of big lenses. Superzooms can almost double in length, but a zoom lock switch can prevent them from accidentally extending in transit.

25 Extend the reach

A teleconverter fits between the lens and the camera and multiplies the effective focal length of the lens by 1.4x (with the Canon EF 1.4x III Extender) or 2x (EF 2x III Extender). The downside is slower autofocus, a narrower maximum aperture, and slightly reduced image quality.

26 Keep it clean

Dust and other marks on the front element can reduce image quality, so keep it spotless. Invest in a bulb blower, brush and microfibre lens cloth – and use them in that order. Buying clear protective filters for all your lenses can provide a barrier against knocks and inclement weather.

27 Get closer

Although telephoto lenses offer greater reach, you may still need to be surprisingly close to a subject for it to fill the frame. However, you'll be limited by the minimum focus distance of the lens. To focus closer than the lens allows, you'll need to buy an extension tube – a simple adaptor that bayonets onto the rear of the lens.

28 Watch the speed

Longer focal lengths require faster shutter speeds to reduce the effects of camera shake compared with lenses with shorter focal lengths. On a full-frame EOS camera, a 50mm lens should deliver sharp pictures when it's being handheld at 1/50 sec or faster – however a focal length of 500mm can require a minimum shutter speed of 1/500 sec or faster for the same result. This means that wide apertures and higher ISOs are often required (eg f/4 at ISO800 for a 1/500 sec shutter speed), although Image Stabilization can help make the difference between a blurred shot and a sharp one. However, for consistently pin-sharp shots we'd always recommend a tripod when using lenses of 500mm or more.

29 Attach a lens hood

It's common knowledge that a lens hood can shield the front element of a lens and prevent ghosting and flare from degrading picture quality. However, a lens hood is much more versatile than that. For instance, fit one when you're shooting in damp conditions and you'll protect the front element from raindrops and snow – it can even be used to hold a makeshift plastic rain cover in place when conditions turn torrential. If you do a lot of photography at the zoo or in an aquarium, consider a buying a third-party rubber hood that will enable you to press the lens against viewing windows and reduce reflections.

1/30 SEC – SOFT

1/640 SEC – SHARP

30 Extend the shooting time

Image Stabilization is a common feature on telephoto lenses and superzooms from Canon, Sigma and Tamron, but it's one of the many advanced features that can quickly drain batteries if used excessively. This is exacerbated in winter, when cold conditions cause camera batteries to lose their charge much more quickly. So when the temperature plummets, switch IS off and increase the ISO to give you faster shutter speeds for handheld photography – or reach for a tripod instead. Extend shooting time further by switching the lens to manual focus (MF) while you're at it. ▶

Six of the best...
Telephoto zooms

- Tamron SP AF 70-300mm £290
  f/4-5.6 Di VC USD
- Sigma 150-500mm £610
  f/5-6.3 DG OS HSM
- Sigma 70-200mm £730
  f/2.8 EX DG OS HSM
- Sigma 50-500mm £1,000
  f/4.5-6.3 DG OS HSM
- Canon EF 70-300mm £900
  f/4-5.6L IS USM

Money no object?

- Canon EF 70-200mm £1,600
  f/2.8L IS II USM

SPECIALIST LENSES

Get a very different view of the world through a macro, tilt-shift or fisheye lens

31 Use Live View to focus

When you're shooting macro subjects, accurate focusing is critical. You'll be dealing with a wafer-thin depth of field, even when shooting at relatively narrow apertures, so switch the lens to manual focus (MF) and use the magnification function offered by Live View to find the focusing sweet spot. By pressing the button marked with the magnifying lens on the back of the camera, you'll be able to enlarge the focus point – one tap gives you x5 magnification, a second tap gives you x10.

WIDE-ANGLE

LENS SHIFTED

32 Try a tilt-shift lens

Tilt-shift lenses have two main features: they enable you to 'shift' the lens to correct for converging verticals in an image, and 'tilt' the lens to increase the depth of field when using a wide aperture. These features have plenty of real-world benefits, such as shooting a landscape while holding the camera; typically you'd have to use a narrow aperture to keep everything sharp, and that would usually result in a slow shutter speed. The lens swivels around as you make these adjustments, which can be unnerving at first, but they're pretty robust tubes of glass. Despite Canon's tilt-shift lenses having the 'EF' prefix, they're all manual focus.

Six of the best...
Macro lenses

● Sigma 50mm f/2.8 EX DG Macro	£290
● Canon EF-S 60mm f/2.8 Macro USM	£350
● Tamron SP AF 90mm f/2.8 Di Macro	£300
● Sigma 105mm f/2.8 EX DG OS HSM Macro	£360
● Canon EF 100mm f/2.8L Macro IS USM	£670

Money no object?

● Sigma 180mm f/2.8 EX DG OS HSM Macro	£1,050

33 Get creative with a macro lens

A dedicated macro lens isn't just for close-focus photography. It still offers the full focusing range – right up to infinity focus – so it can be used in the same way as you would any other prime lens. A 50mm macro makes a great portrait lens on an APS-C camera body, for example, while a 100mm macro doubles up as a sharp, short telephoto lens on a full-frame EOS D-SLR. With most lenses offering a fast maximum aperture of f/2.8, you can create images with a shallow depth of field and freeze motion. Just don't expect them to be a supplementary sports lens, because they aren't the fastest focusing optics around.
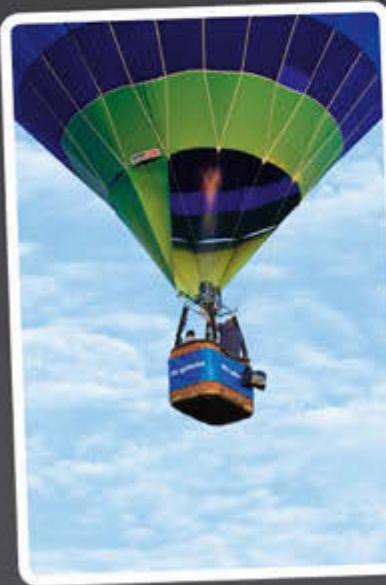
34 Choose the right aperture

Despite depth of field being critical in macro photography, don't automatically choose the narrowest available aperture. Rather than producing the sharpest possible image, the result will be soft thanks to the way that light bends around the aperture blades – a phenomenon known as diffraction. The aperture offering the sweet spot of sharpness and depth of field is usually closer to the middle of the aperture range. Go any wider than f/8-f/11 and the much shallower depth of field becomes an issue.

f/2.8

f/16

f/32

35 Get the best from a fisheye

Fisheye lenses enable you to capture a seriously wide, distorted image, but you'll need to be extremely close to a subject to prevent it appearing as a tiny speck in the final image. Framing a fisheye shot brings its own challenges.

For a start, it's easy for your feet or your shadow to appear in the picture, so activate Live View and hold the camera at arms' length. Camera shake isn't a concern, because the typical 8mm and 15mm focal lengths of fisheye lenses allow for sharp handheld photos at 1/8 sec and 1/15 sec respectively. You can choose wide apertures too, because the depth of field will be extensive at every setting.

BUYING ADVICE

What to consider when buying one of these lenses...

36 Longer is better
You have to be closer to a subject to achieve life-size images with macro lenses with focal lengths around 50mm than you do with ones of 100mm or more. The closer you are, the greater the risk of casting a shadow over the subject or (with small creatures) frightening them away.

37 Focus limiter
Macro lenses can focus from just a few centimetres all the way to the horizon, so they can be quite sluggish to lock on to a subject. A lens fitted with a distance limiter switch allows you to restrict the area that the focusing system has to cover, which can help to speed things up.

38 What's your budget?
Canon's tilt-shift lenses are some of the best optical performers in the EF line-up. But their cost is hard to justify unless you'll be using them day-in, day-out. If all you really want to do is get the tilt-shift 'toy town' effect, try a Lensbaby Composer – or simply recreate the effect in Photoshop.
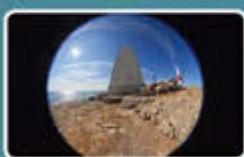
39 The right fisheye
There are two main types of fisheye lenses: circular and rectilinear. You also need to bear in mind whether you'll be using it on a full-frame or APS-C camera. A circular fisheye designed for a full-frame camera won't show a full circular image when used on a camera with an APS-C sensor.

40 Avoid dust
Despite some specialist lenses having unusually shaped front elements and lens caps, they share the same rear cap as every other Canon lens. Once you've attached a lens, join the rear lens cap and camera body cap together to keep them dust-free. ∎

Take sharper shots

Improve your Canon D-SLR shooting skills and say goodbye to soft photos with our jargon-free guide to getting pin-sharp images every time

No matter what camera or lenses you own, or how much experience you have, there will be occasions when your images aren't quite as sharp as you'd like them to be – and while you can fix many image flaws in post-production, you can't recover a badly blurred shot. Your Canon D-SLR and lenses are packed with advanced features, and the latest autofocusing and lens stabilisation systems are there to help you capture pin-sharp photos; however, the array of modes and options can be rather overwhelming, and even if you've chosen the right settings, poor technique can leave you with soft-looking images. But don't worry! We're here to help, with our ten-page jargon-free guide with 19 tips to getting sharper shots… ▶

SHUTTER SPEED AND SUPPORT

Use these simple tricks & tips to beat the shakes

Shutter speed and focal length

1 To capture sharp shots handheld, your shutter speed needs to be fast enough, and the focal length of your lens plays a big part in determining how fast it should be; the effects of camera shake are magnified at the telephoto end, so you'll need faster shutter speeds at longer focal lengths. A good rule of thumb is to shoot at 'one over' the effective focal length (EFL) of your lens; so, for example, an EFL of 300mm requires a speed of at least 1/320 sec. If you shoot with an APS-C sensor camera (such as the 60D or 7D) you'll need to take into account the 1.6x crop factor, and multiply this by the lens's focal length to calculate the EFL. So, for example, if you're shooting at 300mm, 300 x 1.6 = 480, so a 1/500 sec shutter speed should give shake-free shots.

Up the ISO

3 If you're shooting handheld in low light, or capturing action shots of fast-moving subjects, you may find that you can't select a fast enough shutter speed to get sharp shots, even at wide aperture settings. The easiest solution is to increase the ISO, and while newer EOS D-SLRs offer excellent low-light performance, you may have to compromise a little on image quality. If you increase your ISO from 100 to 1600 you'll gain an extra four stops, which, if you lock your aperture, will increase your shutter speed from, for example, 1/15 sec to 1/250 sec.

Image stabilisation

2 An increasing number of lenses feature some form of image stabilisation system, which enables you to shoot handheld at up to three or four stops slower than would be possible with a non-stabilised lens. Canon calls this feature IS (Image Stabilization), whereas Sigma labels it OS (Optical Stabilizer) and Tamron calls its system VC (Vibration Compensation). Stabilisation is a great feature to have when you're shooting in low light, or if you want to freeze action, because you can drop your shutter speed from, for example, 1/250 sec to 1/15 sec. Some lenses include a stabilisation system with two settings, to compensate for both vertical and horizontal movement.

IS OFF

IS ON

//Image: IS Stabilizer.jpg
//Image: IS Stabilizer off.jpg
//Image: high ISO IS IMG_3254.jpg

Get creative with shutter speed

4 Rules are made to be broken, and you can get creative by using slow shutter speeds to blur some or all of an image. When you're shooting cyclists, motor sports or other fast-moving subjects, you can pan the camera to follow a subject, and keep it sharp while blurring the background to create the impression of movement. You can also create 'painterly' effects with a technique called camera dragging. Set your shutter speed to 1/30 sec to start with, then drag the camera during the exposure to turn subjects such as trees into abstract streaks of colour.

SHARP

BLUR

Tripod setup

6 If you're shooting landscapes in low light, and using narrow apertures to maximise depth of field, your shutter speeds are likely to be too slow to shoot handheld. A tripod will help you get sharper shots, but simply mounting your camera on one may not eliminate all movement; you need to make sure the tripod is as stable as it can be. Extend the top leg sections first, avoid raising the centre column if you can, and don't touch the camera or tripod during the exposure; use a remote release or the self-timer to fire the shutter, and enable Mirror Lockup or use Live View. On windy days, hang your kit bag from the centre column (there's a hook for this on some models) to weigh down the tripod. ▶

Mirror Lockup

5 As well as the camera shake that can be introduced if you hold the camera at slow shutter speeds, shots can also be blurred by slight internal vibrations as the mirror flips up and down; if you use long telephoto lenses, or shoot extreme close-ups or long exposures, the tiniest of movements will be magnified, and even if you use a tripod you can't eliminate vibrations completely. The solution is to enable Mirror Lockup; the mirror flips up when you press the shutter button and you then press the button again to take the shot, after which the mirror flaps back down. If you don't have this feature, use Live View; the mirror is locked up while this is enabled.

You'll find the Mirror Lockup feature in your Canon D-SLR's Custom Function menus

C.Fn III : Autofocus/Drive
Mirror lockup
0:Disable
1:Enable
C.Fn III : 12345678

MASTER DEPTH OF FIELD

Aperture, focal length and your lens all affect what's in focus in shots

NARROW APERTURE

WIDE APERTURE

Aperture and depth of field

7 In simple terms, the narrower the aperture (the higher the f-stop number, e.g. f/22), the greater the depth of field. So, for example, if you're shooting a landscape and want to maximise the depth of field to ensure the whole of the scene is sharp, you'd select a narrow aperture, ideally between f/16 and f/22. To compensate for the narrower aperture, which won't allow as much light to reach the sensor, you'll need to select a longer shutter speed to capture a good exposure, so in low light you'll need a tripod to support your camera. However, if you want to throw the background out of focus, for example, to make a portrait subject stand out, you'd select a wide aperture, such as f/2.8 or f/4; as well as portraiture this is ideal for wildlife photography, or any situation where you want to lift your subject out of the background. The wider aperture allows more light to reach the sensor, so you won't have to compromise on shutter speeds, enabling you to shoot handheld even in low light.

Depth of field and focal length

8 Depth of field is also affected by focal length. If you shoot with a wide-angle lens you'll capture a broader depth of field, which keeps the scene sharp from front to back. For example, at f/5.6 on a wide-angle lens (e.g. 10mm) you'll get a broader depth of field than at f/5.6 on a telephoto lens (e.g. 100mm). This is why wide-angle lenses are great for landscapes, while the shallower depth of field of telephotos enables you to isolate a subject you've zoomed in on, making them ideal for wildlife.

f/5.6 at 100mm

f/5.6 at 24mm

Zoom vs prime

9 The quality of your lens can also have a big impact on the sharpness of your shots. Prime, or fixed-focal-length, lenses are optically superb, but they're relatively expensive and can be limiting in terms of flexibility; zoom lenses generally offer greater versatility at lower prices, but at a cost in terms of image quality. As a general rule it's best to avoid the extreme focal lengths of a zoom lens, because optical performance tends to be poorer at the wide and long ends. Another factor to consider is the maximum aperture available at different focal lengths. For example, a 70-300mm f/4-5.6 lens runs from f/4 at the 70mm setting through to f/5.6 at the 300mm setting. As the aperture decreases, the shutter speed needs to be slower to maintain the same exposure, which increases the risk of camera shake. Prime lenses, on the other hand, often have very wide maximum apertures, so as well as being 'fast' lenses – they enable you to use faster shutter speeds – they also have fewer lens elements, making them lighter and optically more precise. The drawback is that you may need to carry more lenses to cater for a range of shooting situations.

Depth of field and where to focus

10 Depth of field decreases the closer you are to a subject, so accurate focusing is vital to ensure that your subjects are sharp. This is why you need to use narrow apertures in macro photography, and even then, if you're shooting extreme close-ups the depth of field may only be a matter of millimetres. As a rule of thumb there's roughly double the amount of depth of field behind a focal point than in front of it. So, for example, if you were to shoot a landscape with a narrow aperture and focus at infinity (A) you'd lose a lot of depth of field; by focusing about a third of the way into the scene (B) you'll get optimum sharpness throughout the frame.
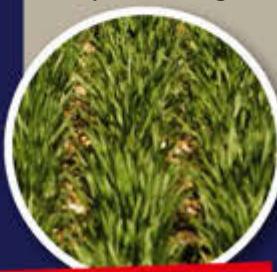
FOCUS ON A: FRONT SOFT

FOCUS ON B: FRONT SHARP
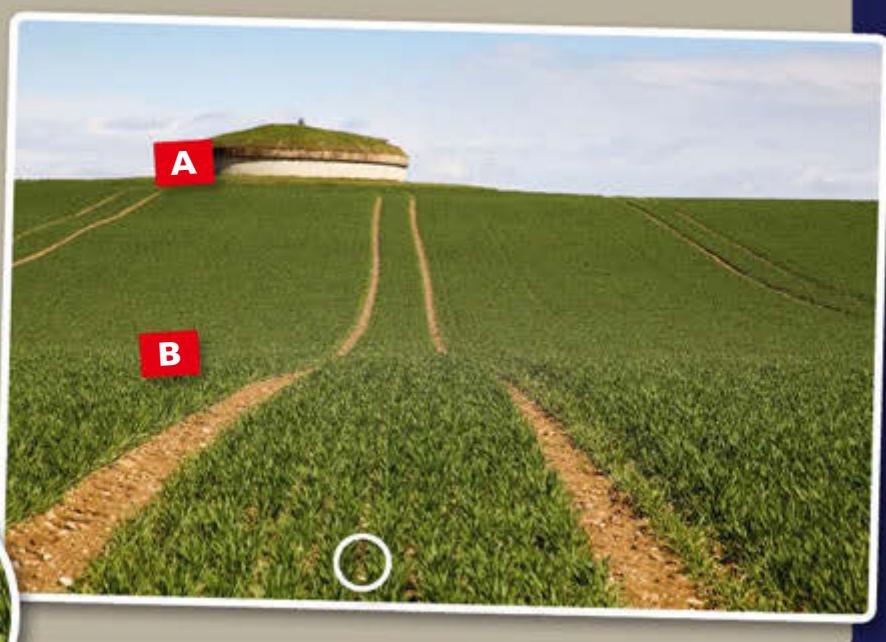
Find the sweet spot

11 The 'sweet spot' of a lens refers to the aperture that will deliver the maximum sharpness across the frame. A lens doesn't produce the same level of sharpness throughout its aperture range, so by determining its sweet spot you can ensure you capture the sharpest shots possible. The sweet spot is usually in the mid-range aperture settings of f/8 to f/11, with sharpness tending to drop off at the minimum and maximum apertures. So your choice of aperture not only affects depth of field; it plays a part in ensuring sharp shots. It's best to use the sweet spot for landscapes, and other situations when you want corner-to-corner sharpness. ▶

FOCUS ACCURATELY

Choose the right AF mode for static, moving or unpredictable subjects

AF modes

12 Your Canon EOS D-SLR has three autofocus modes, which you can switch between by pressing the AF button usually found on the top of the camera and rotating the control dial; you can also access the AF modes via the Quick menu on the rear LCD screen. One Shot mode is ideal for static subjects such as landscapes or still lifes. For sports, wildlife and other action, switch to AI Servo to track moving subjects. For subjects that are static but might move unexpectedly, such as wildlife and children, use AI Focus, which is a hybrid of the other two modes: it initially locks on to a subject in One Shot mode, but switches to AI Servo if the subject moves.

ONE SHOT

AI SERVO

AI FOCUS

AF points

14 Beginners tend to rely on their camera's Auto AF point selection mode. This default mode uses a grid of autofocus points in the viewfinder to focus on whatever's closest in the frame – and this means your camera may not always focus on exactly what you want it to. It's better to manually select your AF points, so you have control over what part of the scene or subject is in focus. Some high-end cameras, such as the 7D, include a hybrid Zone AF mode, which enables you to select a cluster of AF points. This is particularly useful for photographing moving subjects, because the higher number of AF points will increase your chances of focusing accurately on the action. The more cross-type AF points (which detect contrast in two dimensions rather that just one) that a camera has, the more accurate that autofocus is likely to be.

60D vs 7D

The autofocus system in the 7D has 19 cross-type AF points, whereas the 60D only has nine.

60D

7D

Use Live View to focus

15 Your Canon D-SLR's Live View mode makes it quick and easy to check that your focusing is spot-on before you take a shot. Live View works best when your camera is mounted on a tripod. Switch off image stabilisation if your lens has it, and switch the lens to MF (manual focus). Press the Live View button, then zoom in, navigate to the part of the scene where you want optimum sharpness using the cursor keys/multi-controller, and adjust the lens focus ring until the area you're interested in looks perfectly sharp. Once you've taken the shot you can switch to Playback mode and zoom in to double-check that the image is sharp, and tweak the focus and re-shoot if necessary. ▶

Manual focus

13 There's no right or wrong time to use manual focus, but there are times when it will make your life easier. For example, macro photography requires precise focusing due to the limited depth of field created by shooting at such close proximity to subjects. By setting your camera up on a tripod and switching to manual focus, you'll have complete control over which parts of the shot are in sharp focus; if you shoot handheld using autofocus, the chances are your focusing won't be accurate, and camera shake may also be an issue. Low-light conditions can also make it hard for lenses to focus quickly and accurately in AF mode; if so the lens will 'hunt' for focus, causing a delay that may mean that you miss the shot.

OUTPUT SHARPENING

How to correct minor blurring, and enhance images ready for output

In-camera sharpening

16 When you shoot at the JPEG quality setting, your D-SLR will apply a filter to your images, which sharpens them and boosts the colours and contrast; this is why, if you compare a JPEG and a Raw version of the same shot straight from the camera, the Raw file can look slightly soft and washed out. You can change the amount of sharpening applied to JPEGs in-camera by creating a user-defined Picture Style, and adjusting the sharpness setting. If you shoot in Raw, a default sharpening effect is applied in Adobe Camera Raw or Canon's Digital Photo Professional, which you can fine-tune if need be; you'll often want to apply further sharpening to an image before outputting it from Photoshop or other editing programs.

When to sharpen

17 Sharpening your images is one of the most important steps in post-processing. While 'capture' sharpening is applied to JPEGs in-camera, and to Raw images in Camera Raw or Canon DPP, you're still likely to have to apply 'output' sharpening to images. If you're printing images you'll need to sharpen them to counter the softening effect of inkjet printing. You can also sharpen images to correct slight blurring caused by camera shake or subject movement, but you won't be able to rescue badly blurred shots. Finally, you may want to apply selective sharpening to just part of an image – sharpening the eyes in portrait so they stand out. But beware of over-sharpening!

SHARPENED

UNSHARPENED

OVER-SHARPENED
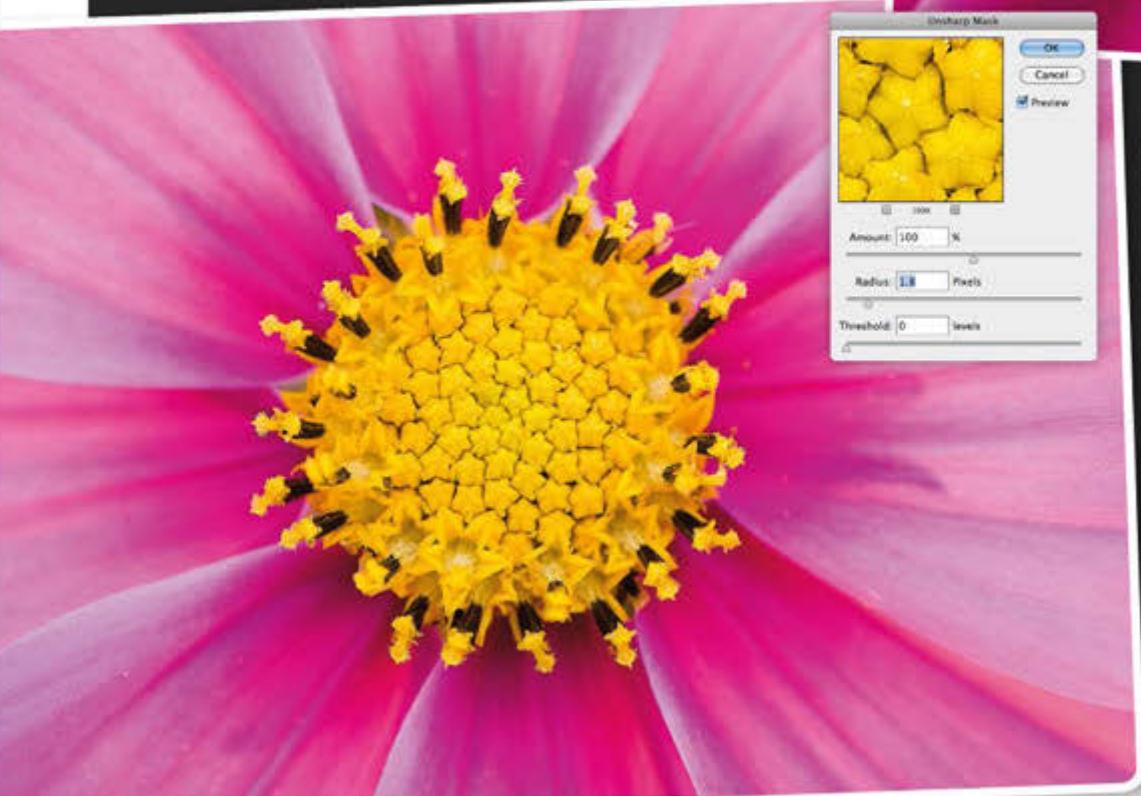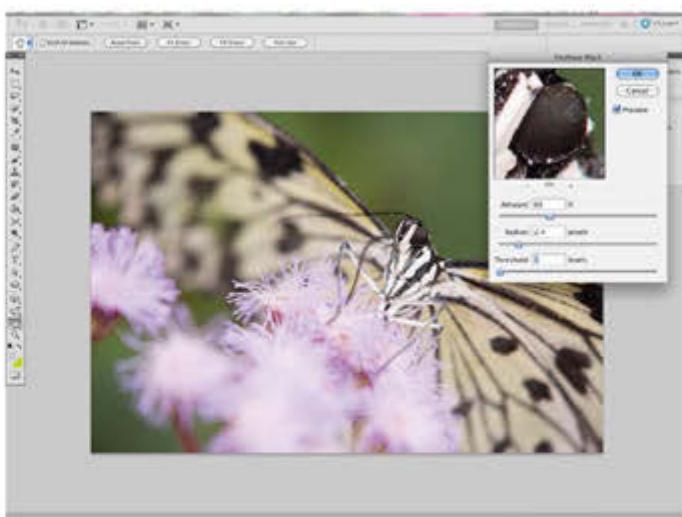
Unsharp Mask in Photoshop CS/Elements

18 Photoshop's Unsharp Mask filter is an easy-to-use and highly effective sharpening tool, which enables you to control the sharpening effect applied to your images using three sliders, and preview the results. To access the Unsharp Mask in Photoshop CS go to Filter > Sharpen > Unsharp Mask; in Elements go to Enhance > Unsharp Mask.

area to count as an edge to which sharpening is applied. At a level of 0, edges throughout the image are sharpened. At higher values (25 levels and over) only high-contrast edges are sharpened, which enables you to prevent sharpening being applied to areas of smooth tones, such as skin and skies, where it can exacerbate noise.

Settings

The settings you use for a particular image will depend on its content; a typical landscape, with 'high-frequency' detail (lots of edges in close proximity), will need a higher Amount setting and a lower Radius value, while a portrait, with 'low-frequency' 'detail (prominent edges, widely spaced) will need a lower Amount and higher Radius. A starting point for most shots is Amount: 100%; Radius: 1; Threshold: 5.

Amount

A This determines the strength of the sharpening applied. Whether you use a low or high value will depend on the settings for the other sliders.

Radius

B Sharpening works by boosting the contrast between pixels along edges in an image. The higher the Radius value, the greater the edge width in pixels across which sharpening is applied. At low settings only fine detail will be sharpened; at higher settings thicker edges will be sharpened too.

Threshold

C This determines how strong the contrast needs to be between pixels for an

Raw sharpening

**19** You can apply sharpening to your images at the Raw processing stage in Adobe Camera Raw and Canon DPP. This will typically be capture sharpening, although you can apply output sharpening too if you don't plan on making major edits to an image in other programs.

Adobe Camera Raw

On the Basic tab you can use the Clarity slider to increase 'local' contrast; the adjustment is somewhere between a global contrast adjustment and a sharpness boost, but it creates the impression of greater sharpness. On the Detail tab there are four Sharpening sliders: Amount, Radius, Detail and Masking. The Amount slider controls the strength of the sharpening, and Radius controls the width of the edges across which sharpening is applied. The Detail slider enables you to restore sharpness to areas of detail that have been blurred by the sharpening. The Masking slider controls the edge mask: at a setting of 0 everything in the image receives the same amount of sharpening, and at 100, sharpening is limited to well-defined edges, so you won't sharpen noise in areas of smooth tones such as skies. You can hold down Alt while dragging any of the sliders to see a greyscale preview showing where the effect of that slider is being applied.
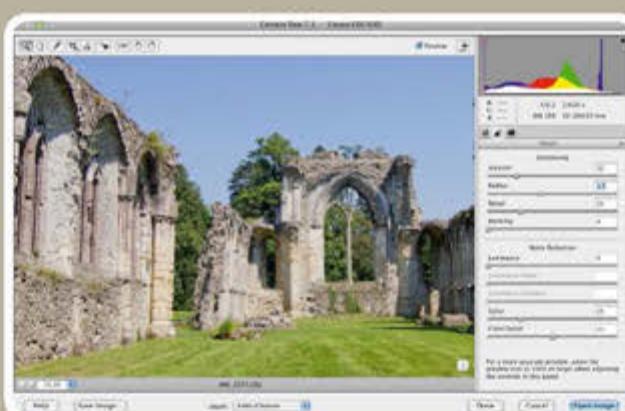
Digital Photo Professional

There are two sharpening modes to choose from on Digital Photo Professional's RAW tab: a single Sharpness slider, which applies a basic but effective overall sharpening effect, and the more advanced Unsharp Mask option, which has three sliders: Strength, Fineness and Threshold. These work in the same way as the sliders in the Photoshop CS/Elements Unsharp Mask filter, with Strength doing the same job as the Amount slider and Fineness working in the same way as the Radius slider. ■

100 CANON SLR SECRETS

Want to get more from your D-SLR? We reveal the top tips, menu options and hidden settings that will transform your photography

Y**ou** can capture great images with your Canon D-SLR straight out of the box, but your results will be even better once you start to leave behind the auto options and presets, and take control of shutter speed, lens aperture, white balance, ISO and other shooting settings yourself.

And things get even more interesting when you start exploring the menu options and customisable settings, because it's here that you can tinker with the innermost workings of your camera, and configure it in a way that suits your own personal style. Our aim in this feature is to show you just what your Canon D-SLR is capable of – and we're willing to bet it's a lot more than you think!

There are differences between cameras, of course, and newer or more advanced models will have features that older or more basic models lack. We'll indicate broadly which cameras have which features as we go along, but you may need to check your own camera's manual to find out for sure, and to get more detailed instructions if required. ▶

100 CANON SLR SECRETS
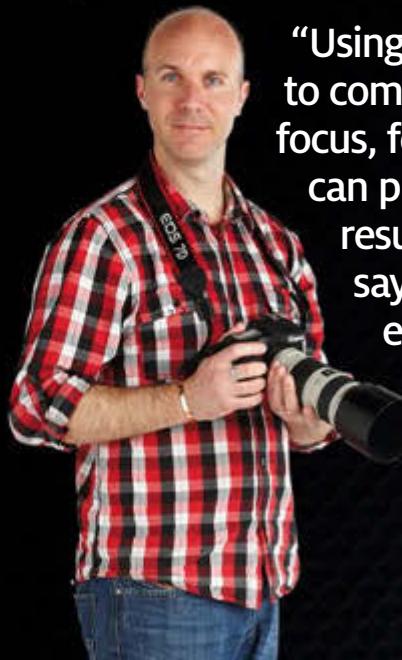
"Using Live View to compose and focus, for example, can produce great results instantly!" says *PhotoPlus* editor Peter

01 AUTO EXPOSURE BRACKETING (AEB)

Working out the correct exposure for a shot can be tricky, especially in high-contrast scenes. The Auto Exposure Bracketing (AEB) function, available on all the latest Canon D-SLR models, enables you to capture three shots at three different exposures, so that you can choose the best exposure later, or combine images.

+1 STOP

02 Q MENU

For fast access to all the key shooting settings, press the Q button on the back panel of your D-SLR to display them on the rear LCD. It's a great time-saver if you need to alter settings fast!

03 AUTO ISO

Auto ISO isn't just for novices: it's ideal for travel photography, when you're shooting in a range of different conditions. And on a bright day it'll automatically choose a low ISO setting, so there's no need to worry about losing image quality.

DID YOU KNOW?

Get autofocus and lens settings right so shots are perfectly focused...

07 EF and EF-S lenses

Canon's EF-S lenses will only fit Canon cameras with a crop-factor APS-C sensor. EF lenses will fit both Canon APS-C and full-frame D-SLR bodies.
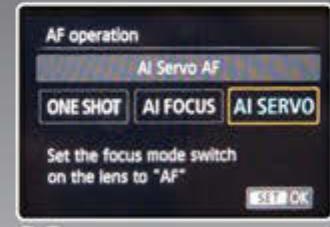
08 AI Servo

AI Servo is the best AF setting to use when shooting moving subjects such as sports and wildlife: the autofocus system will track subjects you focus on.

09 5D Mk III AF points

The 5D Mk III has 61 AF points. If you frequently use one of the outer ones, set 'Manual AF pt. selec. pattern' to 'Stops at AF area edges' in the AF menu.

0 EV

-1 STOP

MISSION INFO

Top tips for viewing, focusing and getting the most from Live View...

13 Live View
For precise focusing, use Live View mode. It might not be as responsive as using the viewfinder, but the big advantage is that you can zoom in to check sharpness on a bright screen, and fine-tune accordingly.

14 LCD brightness
Does your LCD look a little dull or too bright? You can adjust the setting in the Tools menu.

15 Touchscreen
Some newer EOS cameras, such as the 100D, 650D and 700D, have a touchscreen LCD. These are great for instantly accessing and changing camera settings, and quickly reviewing and zooming in on shots.

16 Lock images
In Playback mode you can lock images to prevent them being deleted using the Protect Images option.

17 Auto Rotate
The Auto Rotate menu option controls which way round upright pictures are displayed on your LCD screen and computer.

18 Spirit level
Some Canon models have a spirit level feature to help you get level horizons in landscape shots. If your camera doesn't have this, use the AF points in Live View to line up the horizon.

19 Exposure Simulation
If the Live View image isn't getting brighter or darker as you adjust exposure settings, enable Exposure Simulation in the Live View function settings menu.

20 ND filter preview
If you're using a strong ND filter you may not be able to see your subject in the viewfinder. Switch to Live View, so you can see what you're doing. ▶

04 DON'T KEEP SWITCHING ON AND OFF
You're wasting your time, and your camera's power-management features, if you do. Your D-SLR will power down automatically if it hasn't been used for a while.
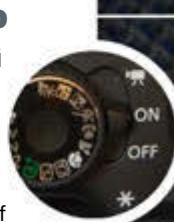
05 EYEPIECE DIOPTRE
Does the viewfinder information look blurred? Adjust the tiny dioptre dial next to the viewfinder eyepiece to fine-tune the focus

06 HALF PRESS THE SHUTTER
Your D-SLR goes to work when you half-press the shutter release, fixing the exposure and the focus, but it only takes the picture when you press it the whole way. This enables you to re-frame your shot without changing the settings, and eliminate shutter lag due to autofocus delay.

10 Lens IS options
Some high-end lenses have hybrid stabilisation systems that will correct for lens angle shifts as well as camera shake when you're shooting macro images.

11 Disable IS for fast AF
When using fast shutter speeds (i.e., above 1/1000 sec), switch IS off to speed up the autofocus system; your shutter speed will ensure shots are sharp.

12 Focus Limiter switch
If your lens has a Focus Limiter switch you can set it to a particular range if you know how far away a subject is, to speed up the AF and stop it from 'hunting'.

100 CANON SLR SECRETS

"When starting out, experiment with creative Canon scene settings to get alternative results," says *PhotoPlus* operations editor Adam

22 AF-ON BUTTON
Pro photographers swear by it; others hardly notice it's there. The AF-On button can be configured to activate autofocus instead of using the shutter release, via the Custom Function menus. Most pros prefer this setup, because it separates AF and metering.

21 C MODE
Custom Mode, available on high-end EOS cameras, enables you to configure the camera to your liking, then store the settings under 'C' on the Mode dial; used well it can help you to speed up reaction times. To register a Custom Mode, choose your preferred exposure mode and set up the camera accordingly, then head to the Setup menu and choose Camera User Settings.
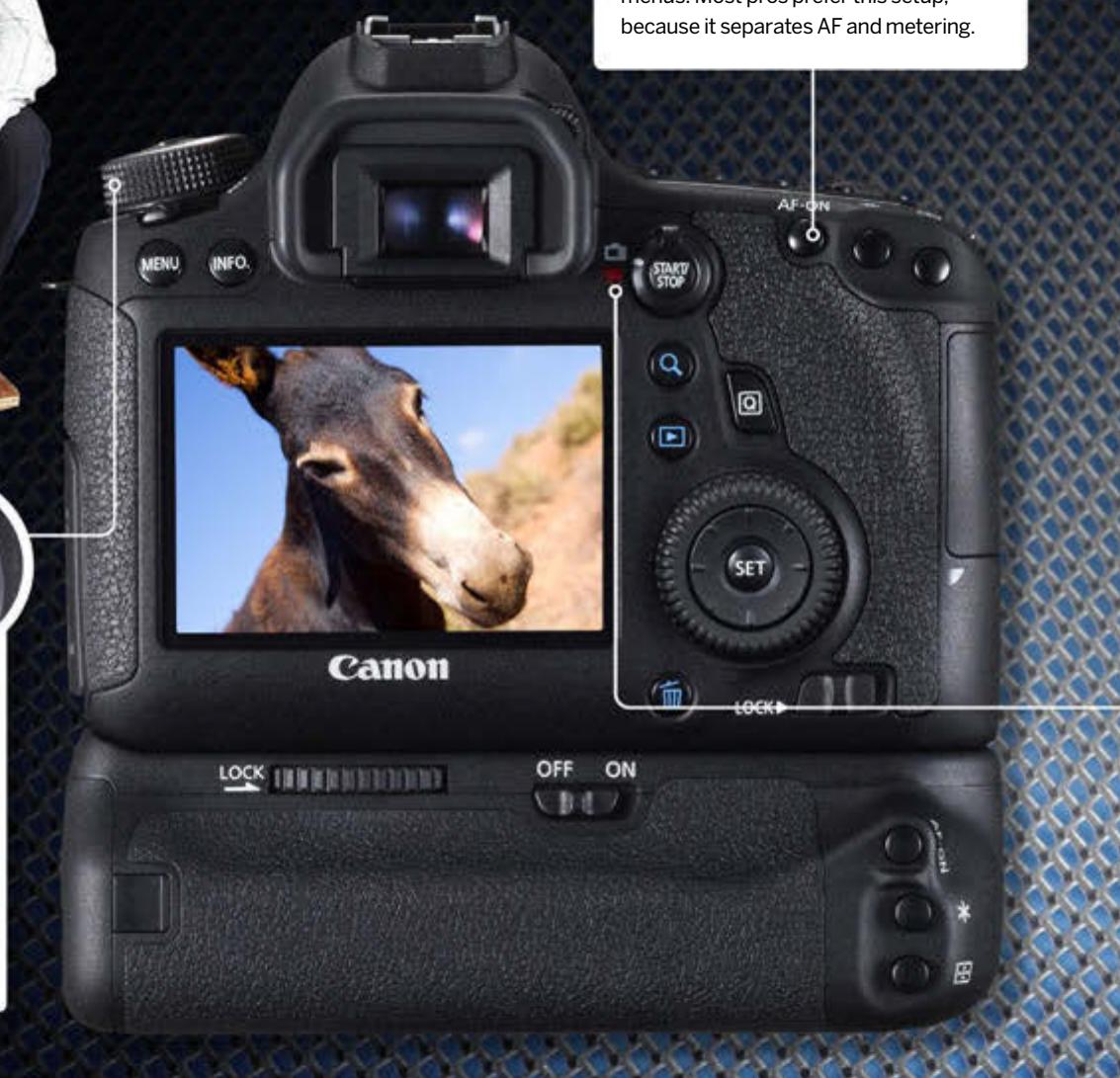
DID YOU KNOW?
Tips to help you get the most from your camera's special hidden features...

27 Play a slide show
Why scroll through your images one at a time manually, when the camera can do it for you? Look for the Slide show option in the main menu.
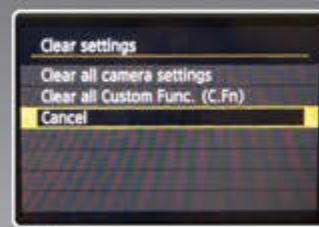
28 Reset settings
To reset your camera, open the main menu and choose Clear settings. You have the option to clear all the settings, or just custom ones you've set.

29 Set the date!
Your D-SLR embeds the time and date in each image, and you (or cataloguing software) might need this information one day, so be sure to set it correctly.

24 IMAGE REVIEW

Does your Canon D-SLR display your images too briefly before they disappear? Go to the Settings menu, and change the Image Review setting.

25 SHAKE-FREE SHOTS WITH THE SELF-TIMER

If you're taking long-exposure night shots, or close-ups with the camera on a tripod, you need to avoid jogging it when you press the shutter release. The solution's easy – just use the camera self-timer. There are 2-sec and 10-sec options in the Drive mode options.

23 MAKE A MOVIE

Canon has been leading the field in Full HD video capture on a D-SLR, especially since the launch of the groundbreaking 5D Mk II, which was used to shoot an Oscar-nominated documentary. All modern Canon cameras are capable of shooting HD movies, with many having a Full HD Movie setting.

26 EXPOSURE COMPENSATION

A quick way to adjust the exposure compensation is to press the Av+/- button, then rotate the Main dial left or right.
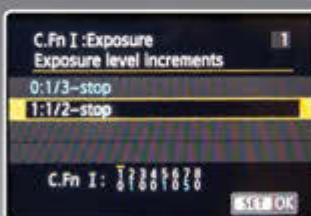
30 Exposure stops

By default, exposure values can be adjusted in increments of 1/3 of a stop; you can change this to 1/2-stop increments in the Custom Functions (C.Fn) menu.

31 DOF preview

The depth of field preview button enables you to see which areas of an image will be in focus, and which will be blurred, as you look through the viewfinder.

32 Embed copyright

If you take pictures for a living, you'll want to embed copyright information. Do this by accessing the Copyright Information setting.

MISSION INFO

Creative settings can be fundamental to the way your camera works...

33 Intelligent Auto

If you're new to D-SLRs, the controls and options can seem overwhelming. Select Scene Intelligent Auto mode, and the camera will choose the optimum shooting settings.

34 Creative Filters

If you want to give your pictures an alternative look, try one of the Creative Filter effects, such Black & White and Soft Focus (600D and later).

35 Bulb mode

This variable shutter speed mode is designed for when you want exposures of more than 30 seconds. You need to keep the shutter release pressed, so use a remote with locking switch.

36 Creative Auto

For those who are put off by semi-auto modes such as Av, but still want more control, some EOS cameras have a Creative Auto mode that enables you to adjust key settings.

37 Built-in flash trigger

You can control external flash units via the built-in flash on your D-SLR. Go to the 'Built-in flash func. setting' menu under Flash Control to activate this.

38 Aperture priority

Want to control depth of field? Then use Av mode: you set the aperture, and your camera sets the appropriate shutter speed for a standard exposure.

39 Flash off mode

If you regularly use Auto mode, but you're shooting in a location where flash photography is prohibited, turn the Exposure Mode dial to the Flash Off setting.

40 Picture Styles

You can download extra Picture Styles at web.canon.jp/imaging/picturestyle. ▶

100 CANON SLR SECRETS

41 AUTO LIGHTING OPTIMIZER

If there's a big difference in contrast between the highlights and shadows in a scene, enable the Auto Lighting Optimizer setting. This will increase the dynamic range of the final image by bringing out more shadow detail. There are three settings: Low, Standard and Strong. Note that this setting will only affect JPEGs, and not Raw files.

"All Canon D-SLRs have hidden features," says *PhotoPlus* staff writer Hollie. "Hunt through your manual to discover your camera's secrets!"

44 DUAL MEMORY CARDS

Why do some Canon D-SLRs have two memory card slots? It's not just in case your first memory card fills up! You can use the second slot to store back-up images, to separate Raw files and JPEGs, or for videos.
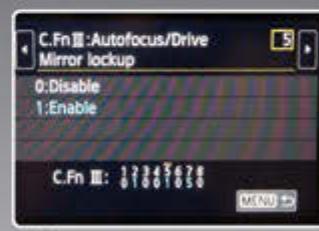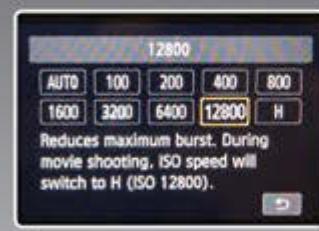
DID YOU KNOW?

Get better results by taking advantage of these shooting options...

47 High ISOs

High-ISO shots generally have larger file sizes, so at high ISOs the maximum burst rate and number of shots you can fit on a memory card will decrease.

48 Mirror Lock-up

Even if you use a tripod and Self-timer mode, the action of the mirror being raised can cause camera shake. Use the Mirror Lock-up feature to prevent this.

49 HDR bracketing

To create an HDR image you can use the Auto-Exposure Bracketing feature, but set wider bracketing increments than usual: +/-2Ev should do it.

42 HIGHLIGHT WARNING

If you select Highlight Warning mode when reviewing your shots, any areas that are over-exposed, such as bright skies, will flash, enabling you to adjust the exposure and re-shoot.

45 INFO/DISP. BUTTON

To display image information in Playback mode press INFO or DISP. Press once to bring up the info for a shot, twice to display the regular histogram and three times to see the RGB histograms.

43 FLASH DIFFUSER

The light from the pop-up flash is quite harsh; a simple diffuser made from greaseproof paper will soften it, avoiding glaring highlights and shadows that are too dark.

46 VARI-ANGLE LCD SCREENS

Some Canon cameras, such as the EOS 650D and 60D, offer a Vari-Angle LCD screen. This is handy for composing your shots using Live View mode if you need to shoot from an awkward position.

MISSION INFO

High-end EOS cameras include some highly advanced features…

53 M-Fn button
New to the 5D line, you can assign the Multi Function button to a setting you access often.

54 Wi-Fi access
You can use Canon's EOS Remote smartphone app to control the 6D over Wi-Fi. Select Camera Access Point mode to connect your phone and camera.

55 Full-frame upgrade?
Planning to upgrade to a full-frame camera at some point? If so you're best off buying EF lenses – EF-S lenses can't be used with full-frame bodies.

56 Nosing around
If you have an SLR with a touchscreen and activate the Q menu, the viewfinder sensor won't switch off the LCD as you hold the camera to your eye, so you can accidentally change settings with your nose! Switch off the LCD by pressing INFO.

57 Process in-camera
EOS cameras from the 60D upwards enable you to process Raw files in-camera. Go to the Raw image processing option in the Playback menu.

58 Hybrid sensor
The hybrid CMOS sensor on the newest EOS cameras offers improved AF performance in Live View and Movie mode.

59 GPS power-saving
The 6D's GPS system can drain the battery, so switch its logging frequency to five minutes if you don't need a minute-by-minute record of a shoot.

60 Better sound
Some Canon D-SLRs offer continuous focusing for movies, but the noise of the focusing motor can be picked up by the onboard microphones. Use an external mic for quality sound. ▶
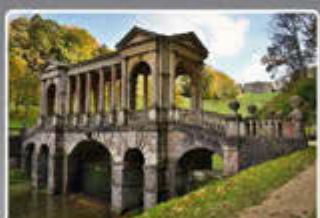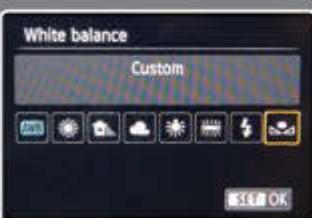
50 White balance
Even if you shoot Raw, set the correct white balance and set Picture Style to Neutral, because these settings affect the preview image on the LCD.

51 Optimum quality
Canon lenses deliver the best optical performance, with sharpness from the centre of the frame to the edges, at middle aperture values such as f/11.

52 Built-in HDR
Some newer EOS cameras, including the 650D and 5D Mk III, have a built-in HDR mode that enables you to capture shots with an extra-wide dynamic range.

100 CANON SLR SECRETS

"Use flash to make your portraits pop!" *PhotoPlus* technique editor Claire says. "They are as useful on a bright, sunny day as when it's dark"

61 USE A CANON SPEEDLITE

Canon's Speedlite flashguns are much more powerful and versatile than a built-in pop-up flash. Whether you're shooting in low light, or want to fill in shadows on a sunny day, you'll have more control over the direction of your flash, with options to bounce and diffuse the light. You can position a Speedlite on or off-camera, and fire it remotely for more flexibility.

62 SPEEDLITE FLASH SETTINGS

Flashguns typically have two main modes: fully manual and automatic E-TTL (Evaluative Through the Lens). In E-TTL mode the camera and flashgun will do the work for you, by firing a pre-flash to measure the light. In manual mode you can set the power level.

63 CENTRAL AF POINT IS BEST

For moving subjects or backlit subjects (when there's little contrast), use the centre AF point – it's the most sensitive.

DID YOU KNOW?

Explore the menus to customise key settings on your D-SLR...

67 My Menu

Fed up of hunting through the menus to find a function you use often? Create your own custom menu of frequently used settings under the 'My Menu' tab.

68 Grid display

In Live View mode you can select either a 3x3 grid or a 6x4 grid to help you compose your images – handy for landscapes and architectural shots.
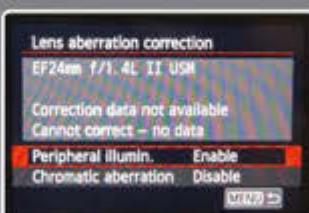
69 Remove vignetting

All lenses produce a degree of vignetting, and if you're using supported Canon lenses you can correct it in-camera by enabling the Peripheral illumination option.

64 LIVE VIEW ZOOM IN

Press the zoom button to zoom in and fine-tune focus manually in Live View mode. This works best with the camera mounted on a tripod.

65 FLASH INTENSITY

Most Canon D-SLRs have a built-in pop-up flash – the pro 5D and 1D series cameras don't. On some models you can adjust the strength using the exposure compensation option under 'Built-in Flash func setting' in the Flash Control menu.

66 DIAL M FOR MANUAL

To really take control of your exposures you'll need to shoot in manual mode (M on the mode dial). In manual mode you can lock both the aperture and shutter speed to get the exposure you want, not what your camera thinks you want. Essential for low-light landscapes, and when using flash.

MISSION INFO

Use the right file format to get the most out of your images...

73 Shoot Raw!

Shoot Raw images to capture the maximum possible amount of highlight and shadow detail, particularly for high-contrast scenes.

74 Raw+JPEG

You can set your camera to shoot both Raw files and JPEGs if you want to be able to use shots straight from the camera, while retaining the option to process images where needed.

75 Small Raw

The EOS 50D introduced reduced-resolution Raw files. If you don't need big images these can save space on your memory card and your computer.

76 Raw Canon files

All Canon Raw files (.CR2) can be opened in the latest version of DPP. It's free to update.

77 Make sure you're saving your shots

Set the 'Shoot W/O Card' option to Off. It's fine for demonstrating a camera in the shop, but it's a liability in everyday use, because it allows you to take pictures without a memory card.

78 sRGB vs RGB

You can set your Canon to shoot in the sRGB colour space, which is used by most digital devices, or Adobe RGB, which is better for commercial publishing.

79 Faster cards

When choosing memory cards, don't just go for capacity. You need 'Class 6' or faster SD cards to shoot Full HD video, or for long periods in burst mode.

80 Format or delete?

Formatting memory cards in-camera wipes the whole card, while deleting only removes photos from the folder being used by the camera. ▶

70 Silent shooting

Some Canon cameras have a Silent mode, which enables you to take shots discretely. It's ideal for documentary, travel and even wedding photography!

71 JPEGs for bursts

Raw images are great for ultimate quality, but your camera can save more JPEGs than Raws in burst mode. On a 7D, say, it's 130 JPEGs against 25 Raw files.

72 Auto power

If your Canon shuts down too quickly in standby mode, change the Auto power off time. On most models you can set it to up to 15 minutes, or disable it.

100 CANON SLR SECRETS
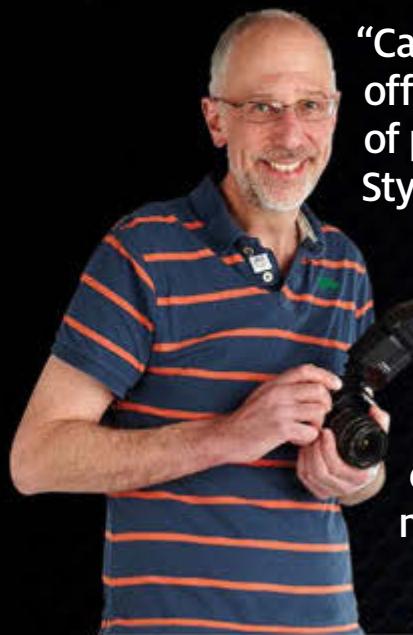
"Canon D-SLRs offer a variety of preset Picture Styles," *PhotoPlus* writer Matthew says. "These can be used to enhance colours, or to capture moody mono images"

82 INTERPRETING THE HISTOGRAM

The histogram display in Playback mode gives you a quick guide to whether you need to retake a shot. Watch out for the graph being cut off abruptly at each end, which means 'clipping', and a loss of detail, in the shadows or highlights.

83 PRINT ORDER

You can mark images on a memory card in-camera for later printing, and even specify the number of prints you want. You'll need to use a DPOF-compatible (Digital Print Order Format) printer, or a print service that supports DPOF.

81 BLACK & WHITE FILTERS

Old-school black-and-white photographers would use coloured filters to change the tonal balance in their pictures. You can do the same with your D-SLR. Select the Monochrome Picture Style, then press Info and choose a Filter effect, for example Red to darken a blue sky.
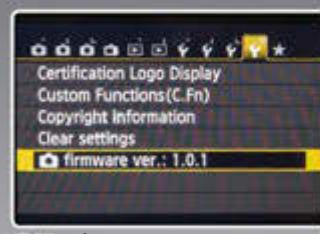
DID YOU KNOW?

Make the most of free software, and get some handy accessories...

87 Firmware upgrades

Periodically, Canon issues firmware updates to fix bugs or add features to cameras. Check the Canon website's Support and Downloads section for updates.

88 Canon DPP

Digital Photo Professional is the Raw processor that comes free with EOS cameras. Use it to save Raw shots as JPEGs, and to correct and enhance images.
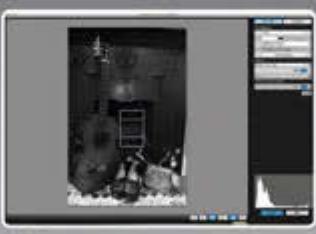
89 More free software!

As well as DPP, you also get Canon's Zoom Browser (PC)/Image Browser (Mac) software, to help you import, organise and share your images.

Master your Canon

84 TV – SHUTTER PRIORITY

Need to control shutter speed? Use Tv mode! In this mode you set the shutter speed, and your D-SLR sets the aperture for a standard exposure. Set a fast shutter speed for freezing movement, and a slow shutter speed to blur movement, for example in clouds.

85 EOS PICTURE STYLES

Picture Styles change the way an image is processed – you need to be shooting in one of the Creative Zone modes (P, Tv, Av, M or A-DEP) to use them. You can also adjust the sharpness, contrast, colour tone and saturation settings for your chosen style.

86 TOP LIGHT

If your camera has a top LCD, this can be illuminated independently of the back screen using the light bulb button at the top-left of the screen.

90 Lens hoods

Lens hoods reduce flare if you're shooting into the light, but they're just as useful for keeping the rain off. Watch for shadows when shooting macro subjects.

91 Drained power?

The covers for recent Canon batteries have a built-in charge indicator. Put it on so the battery-shaped window is blue if a battery is full, or black if it's drained.

92 Get a grip!

Battery grips make it easier to hold your camera if you have large hands, hold an extra battery, and also have an extra shutter button for portrait shooting.

MISSION INFO

Finally, here are a few final tips for getting more from your D-SLR...

93 Focus options

One Shot autofocus mode locks the focus once, even if you select Continuous Shooting; the focus won't shift unless you take your finger off the shutter button.

94 Faster AF

When you use Live View on some cameras, for faster focusing you can switch to Quick mode; it's noisier though, because the mirror has to flip down (so you'll briefly lose the Live View image).

95 HTP

If Highlight Tone Priority is switched on, the Auto Lighting Optimizer is disabled. You may lose detail in shadows, but you'll retain more in the highlights.

96 Focal plane mark

The small circle with a line through it on the top-front panel of your camera is the Focal Plane Indicator. The front of the sensor lies along this line, so it enables you to measure the distance to a subject precisely for macro work.

97 SET button

By default, the SET button on your camera has no function during shooting; you can assign a function to it via the Operation custom function menu.

98 Zoom in

If you want to zoom while recording video, you'll need a lens with a fixed aperture. If you use a variable-aperture lens, the exposure will change as you zoom.

99 AF Point selection

To change the active focus point on cameras that don't have a dedicated 'nipple', press the AF point selection button, then use the main dial.

100 Read *PhotoPlus*!

To get all the top Canon shooting tips and tricks! ■

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MASTER YOUR CANON

CANON WORKSHOP

ESSENTIAL SLR SKILLS

ADVANCED SLR SKILLS

Canon Workshop

PROBLEM #1

How do I troubleshoot my EOS D-SLR?

Don't panic if your Canon camera doesn't seem to be working properly. Chances are it's a simple issue that you can easily fix in just a few moments...

Is your camera switching off too quickly? Change this setting in the setup menu

A complete EOS failure is a relatively rare thing, and you can expect to enjoy many years of pain-free picture taking as long as you look after your kit. Far more likely is that you'll encounter situations where your camera, while not faulty as such, doesn't seem to be behaving as you'd expect it to, and you have no idea what the problem is. Is it a technical issue? Have you made a mistake while adjusting a setting?

Thankfully, Canon includes a guide to some of the most common problems in the back of its camera manuals, enabling you to identify issues and attempt the suggested fix(es). Operational head-scratchers can range from trying to stop the camera from automatically switching off to working out why the image keeps freezing while you're shooting an HD movie. The layers of customisation that Canon's higher-end D-SLR bodies offer increase the potential

pitfalls, with plenty of opportunities for operator-induced errors; it's not difficult, for example, to inadvertently activate or deactivate an obscure custom function buried deep within the menu system.

Normal service can often be resumed by approaching the problem logically and retracing your steps. Picture the scene:

you've lined up the perfect shot, press the shutter release button and... nothing happens. The reason for this could be something simple: is there a memory card in the camera? Is it inserted correctly? Is it full? Alternatively, there might be an issue with the focusing. The default setting for Canon's One Shot autofocus mode is that the subject has to be sharp before a picture can be taken. If you're closer to the subject than the lens's minimum focus distance, or the subject doesn't have enough contrast and detail for the AF system to lock onto, the shutter won't be released.

Sometimes, all that's required is a flick of a switch. For instance, if the camera isn't focusing, check the control panel on the

"Canon includes a guide to some of the most common problems in its manuals"

Troubleshooting checklist

Is your Canon D-SLR playing up? Here are a few simple procedures that will solve many common problems…

Check the switches

It's easy for a switch or dial to accidentally get knocked into the wrong position. Also, some buttons have dual functions, with the top Main dial or rear Quick Control dial adjusting different parameters; make sure you haven't adjusted the wrong one.

Quick control screen

Press the 'Q' button to see the main camera settings on the rear screen, and check if any are set incorrectly. If your camera has a top screen, you can use that too. Also watch out for error codes, which can indicate a more serious problem.

Custom functions

You can change lots of settings, and it's easy to set your EOS up in a way that causes minor hiccups. Use the numbers along the bottom of the Custom Function menu screens to check which functions have been activated (a zero indicates the default setting).

Reset the camera

The final troubleshooting step is to try a reset. You can simply remove and reinsert the battery, or (via the camera menus) reset the Custom Functions or the camera settings entirely. If this doesn't rectify the issue, check that the firmware is up to date.

lens barrel – it's very easy for the focusing slider to slip to the MF (Manual Focus) position while you're transporting your gear in a camera bag. Does the image appear blurred in the viewfinder? It's likely that you've accidentally nudged the eyepiece dioptre setting; look at the readout at the bottom of the viewfinder, and rotate the small dioptre wheel behind the eyecup until the numbers and icons appear needle-sharp again. Sometimes, you might try to dial in exposure compensation, but find that the exposure meter indicator at the bottom of the viewfinder isn't moving. Check that you

haven't accidentally selected one of the scene modes or full auto settings on the Mode dial (exposure compensation can only be applied in the semi-auto Creative Zone modes). It's either that, or you've managed to lock the camera's rear Quick Control dial.

Check and reset

To help prevent these types of forehead-slapping errors, try and develop a 'pre-flight check' routine that you run when you take your camera out of the bag, and again before you put it away. In fact, get into the habit of resetting frequently adjusted settings after

you've taken a shot, as it can be all too easy to double up on exposure compensation or miss capturing a one-off opportunity because you had mirror lock-up enabled. Pretty soon you'll find that these checks become automatic, and your camera will always be ready to grab and shoot with.

If you've followed all the recommended troubleshooting steps and you think the camera is still not working as it should, press the MENU button and scroll to the final set-up page (in the yellow 'spanner' section). You should find a 'Clear settings' or 'Clear all camera settings' option here (you'll need ▶

STEP BY STEP

Why are my flash shots blurred?

If low-light pictures taken with flash in Aperture Priority mode are coming out blurred, here's how to fix the problem…
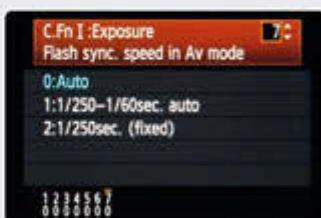
Default setting

1 Your camera will select a slow shutter speed when set to Aperture Priority mode in low light, regardless of whether a flash is attached, resulting in blurred images and 'ghosting'.

Check the speed

2 Here, the 1.3 sec exposure is much too slow for sharp handheld shots. To get a faster speed choose a wider aperture, or up the ISO (the latter option can compromise quality).

Flash sync speed

3 The default flash sync speed setting in Av mode is Auto (which sets longer exposures), but the other two settings will ensure the camera selects a faster shutter speed.

Change the setting

4 Changing the setting to (1), forces the camera to select a shutter speed of 1/60 sec, which removes the ghosting. The ISO is increased to prevent the background appearing dark.

Canon
Workshop

Know your camera's limits

EXTREME EXPOSURE

Although the flick of a switch or the adjustment of a menu option can resolve many issues, some problems are the result of limitations in your camera's capabilities. For instance, if a scene or subject exceeds the dynamic range of the sensor – the amount of detail it can capture from the brightest to the darkest areas – then you'll end up with a shot that's too bright, too dark, or both. You'll need to use graduated filters, bracket exposures and combine them later, or use the HDR (High Dynamic Range) mode on newer cameras such as the 5D Mk III or 6D.

Here, the bright sky has caused the camera to underexpose the foreground flowers. Trying to rescue the shot by lightening the foreground in Photoshop results in a noisy foreground

Why aren't my pictures in focus?

There are a number of reasons why your camera won't be able to get certain subjects sharply in focus, and working out where the problem lies is a relatively simple process. First of all, make sure that the lens's AF/MF switch is in the correct position; the camera can't autofocus if MF (Manual Focus) is selected.

Next, check which autofocus mode you're using. AI Servo mode is designed to track moving subjects, and it will continually refocus the lens if it detects movement. It only takes a slight movement of the subject, or the camera, for the focus to lock onto something else in the frame.

Finally, make sure the subject you want to be in focus is covered by an AF point. We recommend selecting one manually; if you leave the choice up to the camera, it may lock onto something closer to the lens – such as the bars of a zoo cage, rather than the animal you're trying to photograph.

If your lens is 'hunting' for focus – that is, it's focusing backwards and forwards and not locking on to your subject – it's likely that there's not enough light, or the subject is very low in contrast (such as a blue sky). When this happens, switch to Manual, or use One-Shot AF mode to focus on something at the same distance, keep the shutter button pressed halfway and recompose the shot.

If you let the camera choose the AF point, it may focus on objects in the foreground or background instead of your subject. Manually choose an AF point – the centre one is the most precise – and position this over the subject

Low-contrast scenes, and subjects without well-defined edges, can cause the lens to hunt for focus. Switch to Manual so that you can focus precisely

If the camera can't achieve focus, the focus confirmation light in the bottom of the viewfinder will flash. If you're shooting in Live View mode, the AF point will turn red to indicate the same problem

Why can't I select ISO100?

The Highlight Tone Priority setting enables you to capture more detail in bright areas of a scene, at the cost of a reduced ISO range (and so a potential increase in image noise). When HTP is activated, 'D+' is displayed alongside the ISO readout, and you can disable or enable the feature in the menus. Auto Lighting Optimizer is also deactivated when HTP is activated, which can lead to shot not coming out as expected.

Press the Q button and check the ISO range. If some numbers are greyed out, Highlight Tone Priority is enabled

SOFT PICTURES

If pictures are soft overall, it's likely to be because the exposure wasn't fast enough to counter camera shake. This image was shot at 1/200 sec: too slow to get sharp results handheld at a 640mm-equivalent focal length

to have P, Av, TV or M selected on the Mode dial to reveal it). Highlight it, and press Set twice to return your EOS to a box-fresh state. Some basic camera info, such as copyright information, date/time and language, will be unaffected, and if you've activated any custom functions then you'll need to reset those separately.

Still no joy? The next step is to remove the camera battery. Just like laptops and smartphones, D-SLRs have their own operating system and software, and this can occasionally crash. Removing the battery, waiting a minute or so and then re-inserting it can resolve this issue. If the

problem persists, the camera may need a firmware update. Canon intermittently supplies these updates on its website, www.canon.co.uk; they're model-specific, and address known bugs and provide performance enhancements. Check your camera's Set-up menu for the 'Firmware version', and compare this against the latest version available on the website. If you need to update your camera, download the file to your computer, then copy it across to a memory card you've previously formatted in the camera. Pop this into your camera, and follow the on-screen instructions. ∎

Don't overlook the obvious

While your D-SLR is a complex device, it's likely that most problems you encounter will have a simple cause, so don't overlook a few basic checks. If rotating the Quick Control dial on a 60D or above has no effect, it's more likely to be locked than broken. If the camera is refusing to record images to the memory card, it doesn't mean the card is corrupt and needs formatting; chances are that it's simply full, or, in the case of SD cards, it needs to be unlocked. Consult the grey panels throughout your camera manual for more quick fixes and tips like these.

Before you call Canon's technical helpline, check that any sliding switches aren't in the 'locked' position

5 hints and tips for...
Telephoto lenses

We highlight a Canon EOS camera or type of lens and provide priceless advice to get more from your gear

1 Camera shake
Telephoto lenses magnify the effects of camera shake, so make sure your shutter speed is at least equivalent to the effective focal length of the lens. Use a tripod, monopod or beanbag for bitingly sharp results.

2 Stabilisation
Canon's popular telephoto lenses feature two image stabilisation modes for reducing camera shake. Choose the '1' setting for general photography, and the '2' setting for panning to follow moving subjects.

3 Teleconverters
A teleconverter helps you to fill the frame when even a long lens can't get you close enough. It costs you some light though, so exposure times will be longer unless you select a wider aperture or higher ISO.

4 Compress the perspective
Telephoto zooms aren't just for photographing wildlife and sporting events; you can use them in landscape and cityscape photography to compress perspective and create a 'layered' effect.

5 Perfect portraits
Wide-angle lenses can create distorted portraits, whereas the 'flattening' effect of a telephoto can help create flattering ones. Use wide apertures and distant backgrounds to get silky-smooth results.

Canon Workshop

PROBLEM #2

How can I make the most of Picture Styles?

Do the colours in your shots look a little flat? Give them a boost, or get a whole new look, with Canon's Picture Styles

For quick access to Picture Styles, customise your Set button

Canon's Picture Styles enable you to fine-tune the look and feel of your pictures by adjusting the way in which your camera processes shots. Whether you want more contrast or a punchier colour palette, or want to strip away the colour altogether and shoot in black and white, head for the Picture Style selection screen.

All current EOS cameras come loaded with a collection of Picture Style presets. There are six basic options to choose from: Standard, Portrait, Landscape, Neutral, Faithful and Monochrome, with the first five offering various combinations of contrast, saturation, colour tone and sharpness; an Auto setting is also available on more recent cameras. The differences between styles can be subtle (you'll need a keen eye to distinguish between the effects of Neutral and Faithful, for example), but they provide an easy way of trying out different looks with a spin of the control wheel on the back of the camera. Despite some Picture Styles having similar names

to your camera's shooting modes, they're simply adjustments that are applied to an image, and don't have any effect on camera settings. For instance, choosing the Portrait style adjusts the colour tone and reduces the sharpness to produce softer, more flattering skin tones; it doesn't alter the exposure or focusing. You're also free to choose whatever style you like for any

shooting situation. So, while the Landscape Picture Style is tuned to produce vivid skies and foliage, the boost it gives to blues and greens, and the increase in overall saturation and sharpness, can be perfect for shooting motorsports, or for adding impact to interiors.

In addition to using the default Picture Style options, you can also customise the settings to create your own mix. When you access the Picture Style selection screen – either through a dedicated button on the camera, the main shooting menu or the Quick Control screen – you'll be presented with a range of sliders for customising the parameters of each style. You can set the degree of sharpening, for example, or

"Cook up your own unique Picture Style recipe using Canon's Picture Style Editor"

Canon Workshop

Customising a Picture Style

Canon cameras produce punchy, colourful JPEGs, but the default Standard Picture Style can benefit from a few tweaks

Sharpness
SET FROM 0 TO 7 (3 BY DEFAULT)
Avoid setting this too high, or you'll end up with overly sharp, 'digital'-looking pictures

Contrast
SET FROM -4 TO +4 (0 BY DEFAULT)
Boosting the contrast gives a more dynamic result, although this can be at the expense of some fine shadow and/or highlight detail

BEFORE

AFTER

Saturation
SET FROM -4 TO +4 (0 BY DEFAULT)
This boosts the colours across the entire image. Avoid setting this too high when shooting video

Colour tone
SET FROM -4 TO +4 (0 BY DEFAULT)
This changes the tone of your images from red (minus) to yellow (plus)

adjust contrast and saturation. The colour tone can also be shifted to produce more reddish or yellowish images, which can be useful for enhancing skin tones in portraits. The original settings will always be visible (they're indicated by a grey marker on each scale), and you can return a parameter to its default setting at any time.

Scroll to the bottom of the Picture Style menu and you'll find three user-defined settings: User Def. 1, User Def. 2 and User Def. 3. These enable you to create your own styles by choosing an existing preset and customising the parameters. These slots

can also be used to add additional Canon-defined styles. If you go to www.canon.co.jp/imaging/picturestyle you'll find a small range of additional Picture Style files, which you can download and save to your camera.

Cook up a look
You can go one step further, and cook up your own unique Picture Style recipe using Canon's Picture Style Editor program. You'll find this application on the CD that came bundled with your camera, but you can also download the latest version from Canon's website. Picture Style Editor gives

you precise control over how colours are rendered in an image, and the creative effects you come up with here can be applied when processing your Raw files, or loaded into one of the camera's user-defined slots and used when shooting.

One thing to bear in mind when selecting Picture Styles is the file format you're recording your shots in. Shoot JPEGs and, like white balance, noise reduction and other in-camera image settings, the Picture Style used at the time of shooting will be baked into the image file; there's no magic 'undo' option here, and reversing the effect later can ▶

STEP BY STEP

Create and save a user-defined Picture Style

How to customise a preset and assign it to one of the spare Picture Style slots on your Canon EOS D-SLR...

Select User Def.
1 Select Picture Style from the main menu, and scroll down the list of presets until you reach the user-defined slots. By default, each of these mirrors the Standard Picture Style.

Choose a preset
2 Press Set to enter the Detail screen – the Picture Style option will be highlighted. Select this, and choose one of the presets – the default settings will be adjusted accordingly.

Make your changes
3 Move down the list of parameters, and use the sliders to adjust the strength of each effect. The default settings are indicated with a grey marker to help you gauge your settings.

Assign the settings
4 Once you've saved your settings, select the user-defined slot to assign the new settings to it. Any parameter that has been changed from its default will be highlighted in blue.

Canon Workshop

Style options

Canon's default Standard Picture Style boosts the saturation, contrast and sharpening of your shots, and it's tailored to be 'just right' for most situations. However, there may be times when you want punchier colours, such as when shooting a sunset, or occasions when you anticipate working up an image in Photoshop, in which case more subdued tones and colours might provide a better starting point.

Standard produces bright but not over-saturated colours

PORTRAIT

Reduced sharpness and warmer reds and yellows for better skin tones

LANDSCAPE

Punchy blues and greens, richer colours overall and increased sharpness

Picture Styles and Raw files

A Picture Style is only applied to a Raw file when it's being processed, whether in-camera or on your computer. If your EOS offers in-camera Raw processing, you can change the Picture Style before you save a converted JPEG to the memory card. If you're happy with the image preview on the LCD you can opt to go with the Picture Style used at the time of shooting; alternatively you can choose another style, and even customise its parameters.
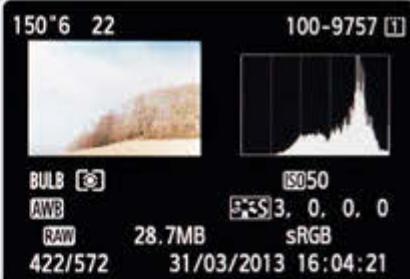
1 When you shoot in Raw, the preview you see on the back of the camera is a JPEG representation based on the selected Picture Style – here, Standard.

2 If your camera offers in-camera Raw processing, select this via the first Playback menu. In the Raw processing screen, select the Picture Style icon, and select a new style using the scrollwheel.

3 Alternatively, press Set to go to the Picture Style screen. Here you can adjust the saturation, sharpness and other parameters. You can save as many versions of the same image as you like.

4 Picture Style presets can be applied when you process Raws in DPP. You can also download new Picture Styles from Canon's site. These new presets can be used in DPP and uploaded to your SLR.

Canon Picture Style Editor

For ultimate control over the colours in an image use Picture Style Editor, which you'll find on the software CD supplied with your EOS camera. When you open a Raw file (ending with .CR2) in the program, you can select colours in the image and adjust their hue, saturation and luminosity. Not only does this enable you to boost one or two specific colours – such as creating bolder reds and yellows – you can also build more creative overall profiles. These can then be saved out as custom Picture Styles that can be loaded into the camera, or applied in Digital Photo Professional. You'll need to make sure your computer screen is calibrated before you make any adjustments, so that you can gauge the changes accurately.

As well as adjusting colour in Picture Style Editor, a tone curve enables you to tweak brightness and contrast

NEUTRAL

Lower contrast and saturation, ideal for JPEGs you'll process further

FAITHFUL

Close to Neutral, but colours are more accurate when shot in standard daylight

Going mono

We generally advise against using a black-and-white shooting setting, but being able to 'see' how a scene's colours translate into shades of grey can be difficult when you're out taking pictures. The answer is to select the Monochrome Picture Style, but shoot in Raw. The preview on the LCD will show a mono image, but the colour information will be saved in the Raw file.

RED FILTER

GREEN FILTER

Detail set. Monochrome
N:None
Filter effect Ye:Yellow
Or:Orange
R:Red
G:Green
Default set. MENU

When you select the Monochrome Style you can fine-tune the contrast, and apply coloured lens filter and toning effects

be time-consuming or – in the case of the Monochrome setting – impossible. The same is true when you're shooting movie footage – choose the Picture Style before you start recording.

Picture Styles can also be used when you shoot Raw files; however, as with white balance presets, you're free to change your mind later. You might have taken a picture using the Standard setting, but you can convert the image using any of the other presets. It's worth trying to get results you like in-camera though, as it can save you time in the long run. Canon's Digital Photo Professional

(DPP) image-editing program, which comes with your D-SLR, recognises the Picture Style you selected in-camera, and applies it when you open a Raw image.

DPP features the same set of Picture Style presets as your camera, making it a quick and easy way to try out different looks for a shot. The Adobe Camera Raw plug-in that comes with Photoshop CS and Elements also includes style presets, which you can select in the Camera Calibration tab. These produce similar, but not identical, results to the presets in DPP, although adjusting the parameters requires more to-ing and fro-ing. ■

5 hints and tips for...

Ultra-wide lenses

We highlight a Canon EOS camera or type of lens and provide priceless advice to get more from your gear

1 Filter edges
Check the corners of the picture when using filters on an ultra-wide-angle lens. The edge of the filter can end up being captured, particularly if you're using a full-frame camera; if this happens, zoom in slightly.

2 Tripod technique
When setting up a tripod to support a long lens, you'd position the leading leg straight forward for extra stability. With ultra-wide shots there's a danger that the leg will appear in the shot, so reverse the tripod.

3 Polarising filters
Avoid using a polarising filter when shooting clear blue skies with ultra-wide-angle lenses. The polarising effect can end up being uneven across the frame, with some parts appearing darker than others.

4 Lens flare
The lens hoods of wide-angle lenses aren't as deep as those of telephotos, so it's harder to stop flare and ghosting from appearing in shots. Try using your hand (out of shot) to shield the front element.

5 Distance scale
Use the distance scale to help you set the hyperfocal distance for landscapes or other shots where depth of field is critical. For more on hyperfocal distance focusing, see the walkthrough on page 79.

Canon Workshop

PROBLEM #3

What's the point of image EXIF data?

Get your head around your Canon EOS D-SLR's shooting data and you'll never look at your pictures in quite the same way again...

EXIF stands for Exchangeable Image File Format. No, wait – come back! EXIF is actually more useful than it sounds: it can help you to understand much about the technical side of picture taking, and enable you to bag even better shots.

EXIF is essentially the shooting data that's recorded when you take a digital photo. It goes far beyond details of the date, time, camera and focal length, and includes extensive information on exposure settings, white balance, flash and more. Even latitude and longitude co-ordinates will be saved in

the EXIF if you're using a GPS-enabled camera like the Canon EOS 6D.

This information is embedded in the image file, so it stays with the image when you copy it from a memory card to your computer; in fact, you have to be quite determined in order to edit EXIF data, or remove it from an image. Image cataloguing and editing programs come with EXIF viewers that can display this information

alongside your pictures, and it can also be displayed on websites such as Flickr. Some of these viewers are better than others, in that they display the most useful and digestible range of information. Other EXIF viewers go into baffling levels of detail. YbCbCr Positioning? VRDOffset? Camera temperature? Picking through these technical nuggets won't make you a better photographer. Needless to say, the viewer built into Canon's Digital Photo Professional software offers the clearest breakdown of shooting info from your EOS camera.

You can view the most important shooting-related EXIF data on your D-SLR's rear screen when you're playing back your pictures. Pressing the Info button (or the Display button on some models) enables

Press the Info/Disp button to reveal the shooting details (see page 72 for more details)

"EXIF data is embedded in the picture file, so it stays with the image when it's copied to your computer"

Where can you view EXIF data?

Most imaging software enables you to access your pictures' shooting information. Here are three EOS-friendly options...
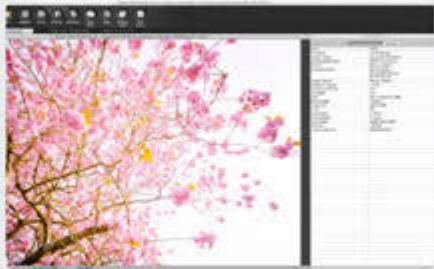
Digital Photo Professional

DPP is the free photo-editing program that comes on the CD with your Canon D-SLR, and it provides a detailed overview of the key shooting info. To access it, highlight a shot and click the Info button at the top of the interface, or use the File > Info option in the menu bar. The exact information listed varies from camera to camera, although the key parameters are listed using familiar Canon terminology.

Photoshop

Photoshop's EXIF viewer (File > File Info) offers a more generic snapshot of camera data – for instance, we're not too fussed about checking the Orientation or Light Source. It occasionally misses key info, such as the maximum aperture value, but the aperture, shutter speed, ISO and focal length info are usually present. You can also view EXIF data in Bridge, and in Elements via the Information panel in Organizer.

Project1709

Canon's stab at cloud-based photo storage and management, Project1709 (sign up at www.project1709.com) uses EXIF data to organise your images with a snazzy timeline interface. In fact, it won't let you upload images without EXIF data. The viewer's not as user-friendly as the one in DPP, but the pertinent details of aperture, shutter speed, ISO and flash setting are collected together in their own window.

you to cycle through a range of information screens. The level of detail is lean, but it provides a handy snapshot of your camera set-up. If the colours or the exposure doesn't look right, a quick check of the shooting info might reveal an incorrect white balance or exposure compensation setting, enabling you to make any necessary adjustments before you take the next shot.

So why would you want to review the EXIF data when you're back at home, unable to make any adjustments to aperture, shutter

speed, ISO and other key settings that can only be tweaked in-camera? Simply because it can help you to better understand the relationship between the shooting settings you use and the images you capture.

Look and learn

Analysing combinations of aperture, shutter speed and ISO while browsing pictures can help newcomers get a better feel for how these affect a shot's exposure, while more experienced photographers can use EXIF

data to help benchmark the performance of their lenses and camera. For instance, if an image looks disappointingly noisy, make a note of the ISO that was used – this setting might be pushing the limits of your camera's sensor. If you're in a similar shooting situation again, you could opt for a lower ISO, and either choose a wider aperture or place your camera on a tripod for sharp results.

If a picture looks soft overall, check the aperture: if the f-stop is a large number, such as f/22 or f/32, then an effect called ▶

STEP BY STEP

How to add your own copyright details

Embed your personal details in the EXIF data – and make it clear who owns a photo wherever it's shared!

Enter the menu

1 Press your camera's Menu button, and select the final tab in the yellow set-up 'spanner' section. You'll find a Copyright information option here – scroll to it and press the Set button.

Copyright options

2 If it's the first time you've entered copyright details, only 'Enter author's name' and 'Enter copyright details' will be available. Add your name, then select the details option.

Keep it brief

3 You're limited to 63 characters, so keep the info concise. To cycle between the main window and the character window, press Q or (as on the 7D, inset) the Picture Styles button.

Out with the old

4 Press the Menu button when you're done. Top tip: if you've bought a second-hand EOS, use the 'Delete copyright information' option to remove the previous owner's details.

Canon Workshop

Checking EXIF data in-camera

You don't have to wait until images are on your computer to review shooting settings: you can check the exposure details, shooting mode, Picture Style and more when you play back images. The default display setting shows only basic information, but you can press the Info button to see additional details.

The Basics
Pressing Info once during playback brings up the most useful details – shutter speed and aperture. But we want to know more!
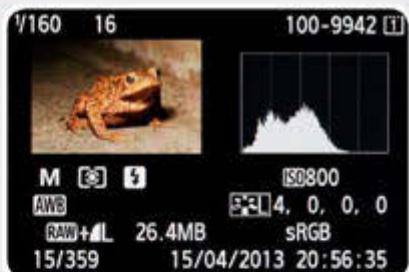
Histogram and more
Tap Info again and you'll see a smaller preview but a more detailed display, which includes the histogram, for evaluating the exposure of a picture, and other settings.
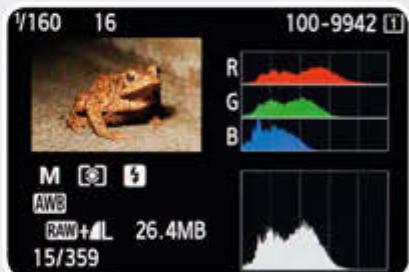
The RGB screen
Another press of Info and you enter the colourful world of RGB histograms. Here you can see if the most important colour channel is exposed correctly.

Learning from mistakes

EXIF data is particularly useful for helping you to identify why a particular image doesn't cut it technically, so you can work out how you need to adjust your camera settings to get perfect results next time you shoot a similar subject.

Why is it out of focus?
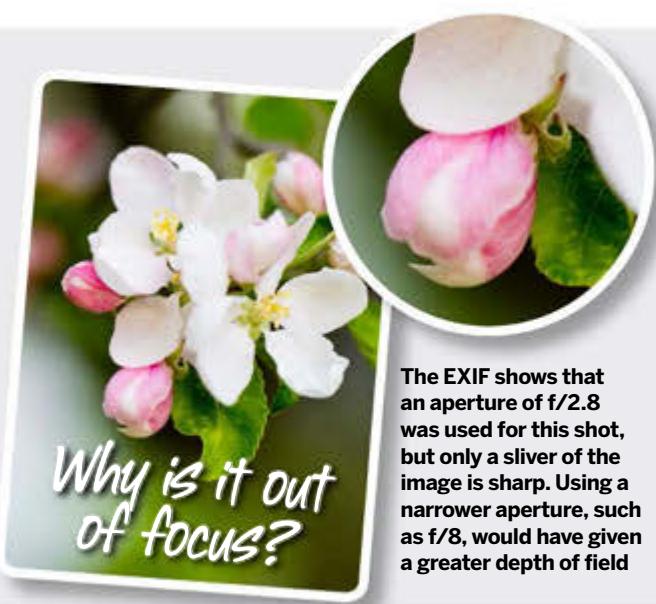
The EXIF shows that an aperture of f/2.8 was used for this shot, but only a sliver of the image is sharp. Using a narrower aperture, such as f/8, would have given a greater depth of field

Editing EXIF data in EOS Utility

Adding copyright information in-camera can be cumbersome. However, you can also use Canon's EOS Utility software (on the CD that came with your D-SLR) to check and edit this information on your PC or Mac. Install the software, then hook your camera up to your computer using the USB cable that came in the box, and switch it on.

EOS Utility offers a number of neat features, but for now select the Camera settings/Remote shooting option on the main Control Camera screen. Using this option, you can shoot with the camera tethered to your computer (the Live View image will be displayed on the screen), but we're only interested in EXIF data here…

1 Attach your camera to your computer via USB cable and switch it on.

2 Select Camera settings/Remote shooting on the Control Camera screen: you can download images here too.

3 In the panel that appears scroll to the hammer and spanner icon to access the Copyright information.

4 Add your name and other info here, and click OK to save the details to the camera.

Why is it soft?

The EXIF data shows a shutter speed of 1/250 sec was used here, which is too slow for the 300mm focal length. However, the aperture was used at its widest f/5.6 setting, so next time, increase the ISO

diffraction is likely to have caused the problem. If the f-stop is a small number, for example f/2.8, then it's likely to be a focusing error (wide apertures offer a shallow depth of field, and it only takes a slight shift in focus for the main subject of the picture to be blurred). By reviewing pictures that look bitingly sharp or slightly mushy, you'll get a feel for the sweet spot aperture range for each of your lenses.

EXIF can help you learn from other mistakes, too. For instance, you might look at a portrait you've taken and notice that although one eye is in focus, the other isn't. Using the EXIF data, you could see which aperture setting was used, and whether there was an opportunity to increase the depth of field by choosing a narrower aperture at the time. If a shot is blurred, check the shutter speed to see if it was fast enough to overcome camera shake; if it wasn't, could you have used a wider aperture, or increased the ISO?

In short, EXIF is a seriously useful feature of digital photography, and can help you develop your skills in no time. ■

Star ratings

On all new EOS D-SLRs you can rate your images from 1 to 5 – this is a great feature, enabling you to do an initial sort of your pictures while you're still out taking them or travelling (on a bus or train, not behind the wheel…) so you can start editing or sharing your best pictures as soon as you get home. These star ratings are stored in the standard EXIF data, so they can be displayed in both DPP and software that uses Adobe's XMP (Extensible Metadata Platform) standard, such as Lightroom.

Rating changed to [·]

Ratings applied in-camera are visible in Canon's Digital Photo Professional

5 hints and tips for…

Macro lenses

We highlight a Canon EOS camera or type of lens and provide priceless advice to get more from your gear

1 Stay sharp
To make the most of the resolving power of macro lenses, use your camera's Mirror lock-up feature, and fire the shutter using a remote release. Invest in a tripod collar for longer focal lengths too.

2 Focus limiter
Macro lenses work superbly for general photography as well as for close-ups, but they can be slow to focus. If your lens has a limiter switch, use this to limit its focusing range and speed up acquisition.

3 Go Manual
With depth of field often measured in millimetres in macro shots, focusing is critical. Switch to Manual focus, and use Live View's magnification feature to help you position the point of sharpness precisely.

4 Life size
For life-size 1:1 reproduction a macro lens needs to be focused at its minimum focusing distance. Switch the lens to Manual, and move the camera in or out to adjust the focus rather than adjusting the lens.

5 Try before you buy
Canon's EF 100mm f/2.8L Macro IS USM lens is an excellent macro lens, but it costs £670. So why not try before you buy and rent one for £40 (weekend) or £57 (week) from Lenses For Hire.

Canon Workshop

PROBLEM #4

How do I beat camera shake?

Get a firm grasp on how to take sharper pictures

We've covered the subject of taking sharper photos previously in this book, but this time we're going in-depth with the specifics of camera shake. When you're reviewing your shots, images blurred through camera shake are beaten only by sloppy composition in the 'if only...' facepalming stakes. While you might be able to get away with a little blur in a low-res shot uploaded to the internet, it's a different matter when you're producing a high-quality print. The good news is that, with a few basic techniques and last-minute checks, camera shake is easy to avoid.

How slow can you go?

Camera shake is caused by two factors: the camera (and lens) moving during the exposure, and the exposure being long enough for that movement to register in the picture. The effects can be mild or severe – from a hazy softness across the picture to total mush – and this is largely dependent on the choice of shutter speed. Traditionally, the 'safe' speed for shooting handheld has been 1/EFL, with EFL being the Equivalent Focal Length of the lens. For example, when using a 100mm lens on a full-frame camera like the 6D, it should be possible to get sharp results at 1/100 sec. However, the same lens fitted on a camera with an APS-C sensor, such as the 650D or 70D, offers an EFL of 160mm (100mm x the 1.6 field of

If you don't have a remote release, use the camera's self-timer for hands-free tripod shooting

view crop factor of the smaller sensor). As a result, you'd need to use a shutter speed of 1/160 sec or faster to stand a good chance of getting a sharp handheld shot.

This 'safe' speed should only be regarded as a general guide. You may struggle to get sharp shots at shutter speeds that are twice as fast, or you may be able to get shake-free results during much longer exposures.

However, Canon's image-stabilised lenses have proved a game changer as far as camera shake is concerned, with top-end lenses boasting up to four stops of shake reduction. This means that, in theory, sharp images can be captured at a shutter speed that's four times slower than recommended. That 100mm lens on a 6D? With image stabilisation activated it could potentially be used at around 1/6 sec and still give shake-free results. Notice we use the word 'potentially': in reality stabilisation simply takes the edge off a slightly trembling camera; cough when you take a shot, and you'll still get a blurred image.

Camera shake is generally less of a concern with wide-angle lenses, as not only

"Canon's stabilised lenses have proved a game changer as far as camera shake is concerned"

Canon Workshop

The difference Mirror Lockup makes

Camera shake doesn't have to register on the Richter scale to create blurred shots; even the smallest movements can rob a picture of sharpness. In fact, the vibrations caused by the mirror inside your camera as it flips up and down between exposures can make the difference between a sharp 'keeper' and a fuzzy reject. This is why Canon includes a Mirror Lockup function in most of its D-SLRs (you won't find it on the EOS 1100D). When you take a shot with this feature activated, the mirror will flip up out of the way – and stay there – when you press the shutter release. Once the vibrations subside, a second dab of the shutter release makes the exposure and the mirror flips back down.

Mirror Lockup is found in the Custom Function menu, or the red shooting menu of advanced models like the 5D Mk III. It's disabled by default

EXPOSURE: 0.3 SEC AT F/16

Blur caused by 'mirror slap' can be noticeable at slower shutter speeds, typically around 1/15 sec

MIRROR LOCKUP ENABLED

MIRROR LOCKUP DISABLED

C.Fn III : Autofocus/Drive   13
Mirror lockup
0:Disable
1:Enable
1 2 3 4 5 6 7 8 9 10 11 12 13
– 0 0 0 0 0 0 0 0 0 0 0 0

are they smaller, lighter and easier to hold steady than most other lenses, but their safe handheld speeds are easier to cope with; camera shake is unlikely to be a problem until you reach 1/20 sec on a 20mm lens, for instance. However, shake becomes a massive issue if you're using a telephoto lens or shooting close-ups. Telephotos offer a narrow field of view, and it only takes a hint of a wobble to send the image dancing all over the place. They're also heavy tubes of glass, and require much faster handheld shutter speeds than standard zooms. Affordable long lenses have slower maximum apertures too, compounding the problem further; many situations will require both image stabilisation and a high ISO in order to hit the fast shutter speeds required to stop the shakes.

Magnifying the problem

Close-up shooting is even more demanding. The greater the magnification of the subject, the more amplified any shake becomes, and when you get down to 1:1 magnification using a macro lens you really ought to support the camera on a tripod, or use a burst of flash to make the exposure. Even a tripod-mounted camera isn't a guarantee of shake-free shots, however, as both the act of pressing the shutter release button, and the mirror slapping up and down inside the camera, can generate sharpness-sapping vibrations. To maximise sharpness at slower shutter speeds, activate your camera's Mirror Lockup function, and fire the shutter using a remote release or the self-timer (if you're ▶

STEP BY STEP
How to get shake-free close-ups
Follow our four-point plan for capturing razor-sharp macro shots every time

Use a tripod
1 For close-up work using small apertures and low ISOs, you'll need a tripod. To get as much of a subject as possible sharp, position the camera so that it's parallel to the subject.

Make a final check
2 Once you've nailed the composition, double-check the tripod's leg, head and column locks for tightness, then press down on the top of the tripod to check for movement.

Don't touch!
3 To prevent any vibrations from the mirror or the action of pressing the shutter release button, enable Mirror Lockup and fire the shutter using a remote release or the self-timer.

Zoom to check
4 Alternatively, activate Live View mode – the mirror will automatically be locked up in order to display the live image on the rear screen. Zoom in to check for sharpness in key areas.

Canon Workshop

Handheld technique

Image-stabilised lenses and the excellent high ISO performance of Canon D-SLRs make it easier to get sharp results when shooting handheld, and you can improve your chances further by adopting good technique. Don't grip the camera body with both hands; use one to support the lens barrel. Keep your elbows tucked in and, if you're standing, place your feet shoulder-width apart. Better still, sit on the ground, pull your legs up and rest your arms or the camera on your knees. Don't hold your breath (you'll just tense up) and don't stab the shutter release, but rather roll your finger onto the button to take the shot.
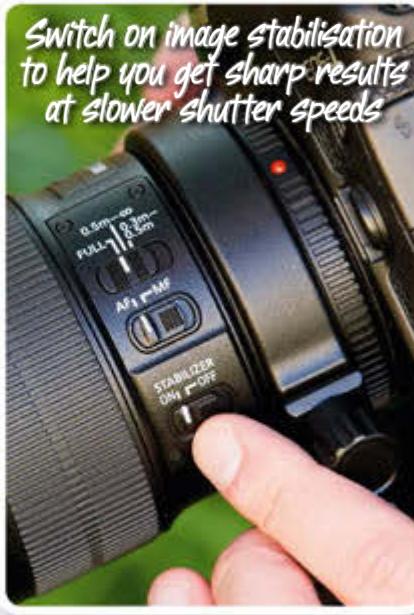
Switch on image stabilisation to help you get sharp results at slower shutter speeds
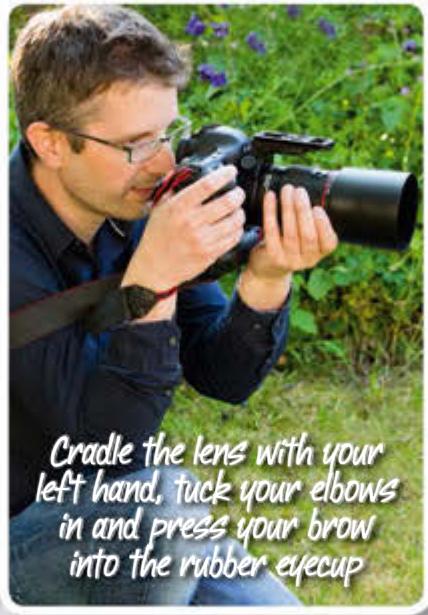
Cradle the lens with your left hand, tuck your elbows in and press your brow into the rubber eyecup

Why a tripod is best for beating blur

When you're shooting close-ups, the choice of aperture is important. Smaller apertures increase the depth of field – and you usually need as much as you can get with macro subjects. Using Aperture Priority mode gives you control over this, but it pays to glance at the shutter speed in the viewfinder before you take a shot. If it's below the 'safe' setting, you'll need to make adjustments to the aperture and/or the ISO, or use a tripod.

f/16 at 1/4 sec; ISO400

Using a small aperture at a low ISO setting results in a slow shutter speed, and not surprisingly the picture is very blurred when shot handheld. There are a number of options for getting around this…

f/2.8 at 1/125 sec; ISO400

One solution is to open the aperture to the widest available setting. The fast shutter speed offers sharp results, but the wide aperture reduces the depth of field, so only a small part of the flower is in focus.

f/8 at 1/125 sec; ISO2000

Increasing the ISO enables us to use a mid-range aperture, so more of the flower appears sharply focused, and still use a fast shutter speed. However, image quality is starting to suffer.

f/16 at 1 sec; ISO100 + TRIPOD

The best solution all round is to return the camera to the original preferred aperture, drop the ISO to 100, but use a tripod to support the camera during the longer exposure time of one second.

Image stabilisation explained

There are a number of different IS settings in the Canon lens line-up. For instance, the EF 100mm f/2.8L Macro IS USM lens includes Canon's Hybrid Image Stabilization, which is designed to correct two types of shake: angular wobble and physical shift of the camera up and down (although it still can't correct for any forwards or backwards movements you make). It offers up to four stops of shake stabilisation at long ranges, but this tends to drop to between one and two stops for close-up shooting. Canon's telephoto lenses feature an additional IS switch, with two positions: 1 and 2. Use the first for general photography of stationary subjects, and the second if you're photographing action (position 2 only corrects for movement in one plane, so it won't try and cancel the movement of your camera as you track a subject).

Canon Workshop

Check the shutter speed; here 1/100 sec should be fine for a 100mm lens

Brace your arms, the camera or the lens against a solid surface if possible

The focal length factor

The longer the lens, the faster the shutter speed required to get sharp handheld shots. However, your tolerance to camera shake is likely to be very different to someone else's, and factors such as weather conditions, image stabilisation (and its strength) and handholding fatigue all play a part in how successful you'll be. When it comes to macro photography, lenses with longer focal lengths give you more working room (you don't have to be so close to get a frame-filling shot of a miniature subject) but they're also more prone to camera shake than shorter macro lenses. This is why we'd recommend fitting a tripod collar to macro lenses with a focal length greater than 100mm, and reaching for your three-legged friend.

180mm lens = 1/180 sec

60mm lens = 1/60 sec

outdoors and it's windy you may need to weigh your tripod down too).

When you're shooting from a tripod, the choice of shutter speed is largely irrelevant, but it's all-too relevant when you're shooting handheld, and it can be surprisingly easy to overlook, particularly if you're shooting in Aperture Priority (Av) mode. This is the default mode for many photographers, as it enables control over the aperture and, therefore, the depth of field in an image. One alternative option is to switch to Shutter Priority (Tv) mode,

set a shutter speed at which you feel comfortable handholding the lens at the required EFL, and leave it to the camera to adjust the aperture to capture a balanced exposure. Consider using your camera's Auto ISO function in conjunction with Tv mode, as this will ensure that you'll be able to make an exposure in low light levels that would normally require a wider aperture than the lens's maximum setting. The resulting image may be a little noisy, but it's better than one ruined by camera shake. ∎

5 hints and tips for...
Super-telephoto lenses

We highlight a Canon EOS camera or type of lens and provide priceless advice to get more from your gear

In association with...

LensesForHire .co.uk

1 Focus preset
The Focus Preset switch on Canon's super-teles enables you to store a focus distance and have the lens instantly snap to that focus distance at any time – a useful function for speeding up autofocus acquisition.

2 IS modes
Canon's latest 500mm f/4 lens has three IS modes: use position 1 for stationary subjects, position 2 for panning and position 3 for tracking erratic action (the IS won't kick in until you press the shutter release).

3 Tripod head
Super-telephoto lenses are heavy, so naturally you need a solid tripod to support them. Don't overlook the tripod head, either – we'd recommend a gimbal-type mount for feather-light, fingertip control.

4 Feel the power
In addition to the usual AF and MF focusing options, Canon's new super-teles feature a PF setting. Use this 'Power Focus' mode when you're shooting video, for smooth and steady autofocusing.

5 Live the dream!
Canon's EF 500mm f/4L IS II USM lens is a dream lens for most of us, but costs almost £8k! You can still live the dream though, by renting one for three days for £243 or a week for £347 from Lenses for Hire.

Canon Workshop

PROBLEM #5

What's depth of field all about?

Depth of field is an indispensable creative tool – but what exactly is it, and how can you control it?

Depth of field, or DoF for short, is the distance between the nearest and farthest objects in a scene that appear acceptably sharp in a photo. We say 'acceptably sharp' because only one point will be truly razor-sharp in your pictures, as your lens can only focus at a single distance. However, the sharpness falls off gradually both in front of and behind the point you're focusing on, and the depth of field is a measure of how far this sharp area extends. Controlling the depth of field makes a real difference to how your pictures look. The less depth of field there is, the easier it is to blur backgrounds, which is often desirable for portraits. Increasing the depth of field

Use Live View to help you judge focusing and depth of field accurately

> "You generally want as much depth of field as you can get when shooting landscapes"

helps you to capture more detail in a subject or scene, and you'll generally want as much depth of field as you can get when shooting landscapes and macro subjects.

Your camera doesn't have a depth of field control as such; rather it's governed by a number of factors and camera settings. The distance to the subject (and the distance between subject and background), the focal length of the lens and the size of the camera's sensor all play a part, although it's the choice of aperture that's generally seen as having the biggest impact.

For those new to photography, the aperture is the hole in the lens that light has to pass through to reach the camera's imaging sensor. It's measured in f-stops, and can be adjusted from a wide aperture

(represented by a low f-stop number like f/2.8 or f/4) to a narrow aperture (with a high number, such as f/22 and f/32). The choice of aperture is key to controlling exposure, as wide apertures let in more light and narrower apertures let in less, and it also has a big bearing on depth of field, with wide apertures reducing it and narrower ones increasing it.

Distance and focal length

When it comes to selecting an aperture you also need to consider your distance from the subject, as the closer you are the shallower the depth of field will be – when you're focusing close-up and using a wide aperture, the depth of field may only measure a few millimetres. Imagine, for instance, that you're using a 70mm lens on a 7D to photograph a

How aperture affects depth of field

Wide apertures reduce the depth of field and help to separate the focal point from the rest of the picture, whereas narrow apertures bring more of a scene into apparent sharp focus. Although apertures are consistent across lenses (an aperture of f/8 has the same effect whether it's used on a 50mm lens or a 500mm lens), lenses don't offer the same range of settings. For instance, expensive 'fast' lenses offer very large maximum apertures for their focal lengths, such as f/2.8 on a professional 300mm lens, compared to f/5.6 on a cheaper equivalent. As well as letting more light in (and enabling the faster shutter speeds that give them their name), faster lenses enable you to capture a shallower depth of field.

f/2.8

f/16
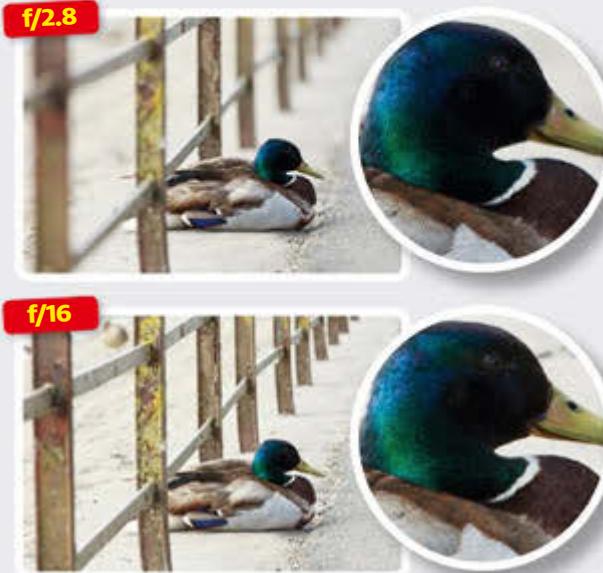
Wide aperture: f/2.8

✓ A wide aperture offers a shallow band of sharpness. Both close-up and distant background details will disappear into blur

✗ Such a shallow depth of field demands accurate focusing: here, the mallard has moved its head, so it's no longer sharp

Narrow aperture: f/16

✓ Choosing a narrow aperture extends the depth of field, and this can be more forgiving when it comes to focusing errors

✗ Narrow apertures can result in slower shutter speeds – and blurred pictures caused by camera shake, as seen here

subject one metre away. With a wide aperture of f/2.8, the depth of field may only be 2cm at this close distance. However, if the lens was refocused on a subject 10 metres away, that same aperture may give a depth of field of almost 170cm. Consequently, your focusing needs to be bang-on when you use extremely wide apertures at close distances, otherwise important details may look soft.

Before you set the optimum aperture and position yourself at the perfect distance

to provide the depth of field you want for a shot, you need to think about the best focal length to use. The lens doesn't affect the depth of field per se – when it comes to aperture selection, f/5.6 on a 20mm lens offers the same depth of field as f/5.6 on a 200mm lens – but the magnification offered by the focal length does play a part. Longer lenses have a narrower field of view than wider ones, so they take in less of a scene, effectively making everything appear bigger

in the frame. This includes the background, with any blur becoming magnified too.

Sensor size has a similar effect on the depth of field. The larger the imaging sensor inside the camera is, the easier it is to create shallow depth of field effects – this is one of the reasons many pros reach for full-frame cameras. The smaller APS-C sensor that you find in the majority of EOS bodies records a smaller area of the image projected by the lens, so everything appears larger in the ▶

STEP BY STEP

How to use hyperfocal focusing

Use this technique to get the maximum depth of field possible when shooting landscapes

Set the aperture

1 For maximum sharpness you'll need to use relatively narrow apertures. Select Aperture Priority and set an aperture of around f/16 (higher f-stops can lead to soft pictures).

Turn off autofocus

2 Switch your lens to the manual focus setting: you need to set the lens at a precise distance with hyperfocal focusing, and the lens would refocus if left in AF mode.
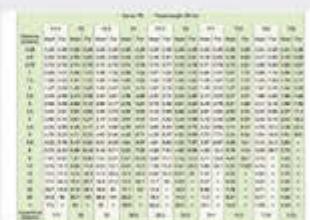
Find the distance

3 Visit www.dofmaster.com (or use its smartphone app) and input your camera and lens info. You'll be given a table of depth of field measurements and a hyperfocal distance setting.

Set the distance

4 Focus the lens at the distance suggested for the aperture being used. If the image appears blurred, use the camera's depth of field preview button to show the true picture...

Canon
Workshop

Up the ISO to get more DoF

For landscape photography, or any other situation that requires an extended depth of field to keep everything sharp from the foreground to the background, you'll want to use narrow apertures. However, as we've seen this leads to slower shutter speeds; this is no problem if you're shooting with a tripod, but if you're shooting handheld sharpness can be lost through camera shake. The solution here is to increase the ISO to compensate. First, set the aperture, then set an ISO that brings the shutter speed within the 'safe' handheld shooting speed of the lens (aim for 1/focal length, so 1/50 sec for a 50mm lens).

1/160 sec at f/4; ISO200
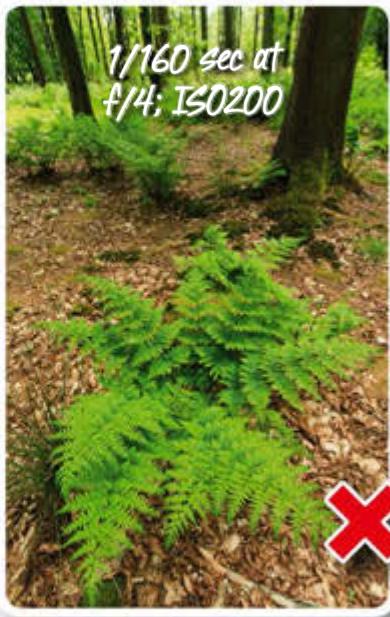
A wide aperture of f/4 means the extreme foreground and background detail appears out of focus

Previewing depth of field

It's difficult to gauge the depth of field when looking through the viewfinder, as the image you see is shown at the lens's widest aperture setting; the aperture you've dialled in isn't actually set until just before the exposure is made. Most EOS D-SLRs have a depth of field preview button, which you'll find near the lens mount: holding this down sets the lens to the selected aperture, so you can gauge what will be sharp; the downside is that the narrower the aperture, the darker the image in the viewfinder. The alternative is to use Live View mode: if you hold down the depth of field button the bright image on the LCD will enable you to judge the depth of field accurately, even when using narrow apertures in low-light conditions.

The bright view provided by the wide-open aperture of f/2.8 in Live View

Pressing the depth of field button accurately previews the DoF at the selected aperture of f/11

Why distance matters

Although wide apertures reduce the depth of field, the effect depends on how far the subject is from the lens. The farther away the subject is, the greater the depth of field – even when a lens is used at its widest aperture. Take these two examples: both were shot at f/2.8, but at different distances from the subject. The shot of the goose doesn't work because the background still looks comparatively sharp, and the bird blends into it. The dandelion image is more successful: the close focusing and wide aperture combine to produce a shallow depth of field that separates the flower from its surroundings.

f/2.8: focusing at 20ft

f/2.8: focusing at 1ft

Canon Workshop

1/50 sec at f/16; ISO1600
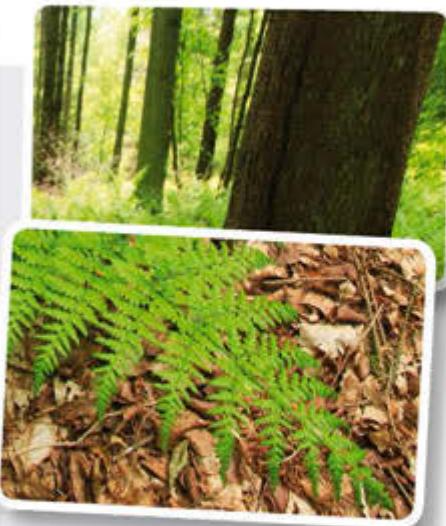
It's better to choose a narrow aperture, then increase the ISO to enable a safe handheld shutter speed

Specialist lenses

The problem with using very narrow apertures to extend the depth of field is that it can reduce sharpness due to a phenomenon called diffraction. A wider aperture will produce a crisper image but with less DoF, so you'll have to decide which is more important, or set an aperture somewhere in the middle. Not so if you use a tilt-shift lens: these pricey chunks of glass enable you to use a wide aperture for maximum sharpness, and then tilt the lens to adjust the plane of focus and maximise the depth of field.

picture than it does using the same focal length on a full-frame camera; it's a bit like cropping the shot in Photoshop. Attach a 50mm lens to an APS-C D-SLR like the 700D, for instance, and its effective view will be the same as that of an 80mm lens (50mm x 1.6 crop factor of the smaller sensor). On a full-frame camera such as the 6D, there's no crop factor – it captures the full view of the lens. In order to get the same image size as on the 700D, you'd need to be closer to the subject, and, as we've seen, the

closer you are to a subject the shallower the depth of field becomes.

Of course, cameras with smaller sensors can be useful if you're looking to maximise the depth of field in your shots, and a technique called 'hyperfocal focusing' will also help you to maximise front-to-back sharpness in a scene. This involves manually focusing the lens at a distance that will capture sharp detail from half the hyperfocal distance to infinity – see our step-by-step walkthrough on page 79. ∎

5 hints and tips for...

Fisheye lenses

We highlight a Canon EOS camera or type of lens and provide priceless advice to get more from your gear

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1 Choose your view
Fisheyes generally come in two flavours: full-frame or circular. The effect depends on the lens design and the size of the sensor inside the camera, so check the specs to make sure the results will be what you're expecting.

2 Get close
Because of the incredibly wide view of a fisheye lens (up to 180 degrees, corner to corner), you'll need to get much closer to a subject than would ordinarily be the case in order to prevent it from looking too small in the picture.

3 Exposure issues
The inclusion of such a wide expanse of scenery can cause severe contrast problems if you have a bright sky and a darker foreground. You may need to shoot several bracketed exposures, and combine the images in post-processing.

4 Check the edges
It's all too easy for your feet or your shadow, or a set of tripod legs, to appear in the bottom of the picture in fisheye shots. Make a quick check of the edges of the frame before you press the shutter button.

5 Try before you buy
Want to have some fisheye fun without having to splash out? The amazing Canon EF 8-15mm f/4L USM lens is only £52 for 3 days from LensesForHire.co.uk: also check out their fisheye guide at bit.ly/IKNBWq.

Canon Workshop

How can I shoot top-quality HD video with my EOS D-SLR?

Making pro-looking movies with your D-SLR is easier than you think

Movie footage shot on smartphones has its place (usually cluttering up YouTube), but for beautiful, crisp, high-definition footage with a 'cinematic' look and feel, you can't beat your D-SLR's Movie mode – at least not without splurging tens of thousands of pounds on a dedicated video camera. Professional filmmakers the world over reach for Canon's EOS system, and the 5D series in particular, as it provides high-quality results on a budget (check out Oscar-nominated documentaries *Hell and Back Again* and *The Tsunami and the Cherry Blossom*, both shot on a 5D Mk II).

Canon has even introduced a premium-priced video-specific 'Cine' range of lenses and D-SLR bodies – but you don't have to go that far: cheaper EOS bodies twinned with good-quality lenses can produce phenomenally good videos with the help of a few key techniques and technical tricks.

HD video can only be shot when your D-SLR is in Live View mode. Most new EOS camera bodies include a direct Live View switch on the back of the camera near the viewfinder. Flick this to the red video camera icon, hit the Start/Stop button and you start recording instantly.

Using Live View to shoot movies requires a slightly different approach to taking stills using the viewfinder. For a start, the camera won't be as stable, as you won't be bracing it against your forehead. Stabilised lenses and a tripod or monopod pay off here, as do the vari-angle screens on the 650D and 70D; being able to fold out the rear monitor on these bodies enables you to achieve not only a more comfortable shooting position, but to shoot easily from interesting angles.

Composition and cuts

The Live View image is cropped to the narrower proportions of the HD movie format you've selected, and this can lead to unexpected results if you've initially used the viewfinder to frame the shot. Unless you want heads trimmed and feet chopped off, compose your shots on the rear screen from the start. The good news is that all the composition skills you've picked up in your stills photography apply when you're shooting video too; for instance, framing a scene according to the rule of thirds, so that the main subject is positioned off-centre, often leads to more balanced-looking shot than if you place everything dead-centre.

The main difference between composing for movies and stills is that, for video, each shot is a transient moment in a sequence, so you need to think about how you're going to link each clip. You don't have to go to the lengths of scripting and storyboarding every frame; you just need to think about shooting a variety of angles and 'cutaway' shots. This will make it easier to edit your home movie, enabling you to

Press the AF-ON button on the back of the camera to autofocus during movie shooting

"For the best results, nail the exposure before you start shooting"

break up long sequences and cut smoothly from one scene to another.

There are technical considerations to think about too. First up is the format you're going to record in. As with photos, we'd go for the best quality every time (that's lightly compressed Full HD, 1920x1080 on the latest D-SLRs). Next, you need to decide on a shooting mode, as this has an impact on the degree of control you have over the exposure. As with stills shooting, Auto (A) and Program (P) mode take care of everything for you; simply compose your shot and hit record. Shutter Priority (Tv) and Aperture Priority (Av) mode let you set the shutter speed and aperture respectively, but do this while you're recording and the change in exposure will be noticeable in your movie. For the best results, nail the exposure before you start shooting, using the on-screen histogram as a guide.

Another area which requires a pre-flight check is focusing. Most EOS cameras can't continuously autofocus in Live View ▶

What you see is what you get

The Live View screen offers a 100% view of the recorded area, cropped to the 16:9 proportions of the HD movie format. Pressing INFO cycles through various information overlays – what's displayed varies from camera to camera – and once you start recording most of this information is removed, to leave a clear view of the action.

AF mode
Choose from Live mode, Face Detection Live mode or Quick mode (although the AF mode will switch to Live mode if Quick mode is selected).

AF point
Although you can autofocus while you're filming, it's best to focus manually before you start recording.

Video recording size and time
This line displays the movie size, frame rate, compression and remaining (or elapsed) time.

Histogram
This provides a real-time indication of the exposure, but disappears when you start recording. If you don't need the histogram you can display an electronic level instead.

Audio recording level
Manual audio recording is shown here, along with an on-screen meter for monitoring sound levels.

Shooting mode
The exposure mode is shown here. M is Manual, while Av and Tv are Aperture Priority and Shutter Priority. A video camera icon by itself indicates Auto mode.

Think of your movie footage as being like a JPEG rather than a Raw file, as the settings you choose when shooting are permanently embedded in the file

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How to take manual control with HD video

Shooting with manual settings on your D-SLR gives you precise control over exposure, audio and focusing...

Why go Manual?
1 Unlike shooting stills, you can't change the ISO when recording movies in Av or Tv mode. The camera may set an ISO too high for the conditions, leading to noisy movie clips.

Set the ISO
2 Select Manual mode, press the ISO button and set a more suitable ISO. Note though that if the ISO changes during recording, the white balance may shift if this is set to AWB).

Better sound
3 The Sound option in the Live View menu is set to Auto by default. Highlight this, press SET and select Manual, then adjust the Rec Level so the meters avoid hitting 0.

Focus and record
4 Switch the lens to MF and manually focus on your subject – zoom the Live View image to help. Press Start/Stop to begin filming – a red dot will appear at the top of the screen.

Canon Workshop

Building a sequence

As you're recording clips, try to envisage how you'll link them at the editing state in order to create a smooth viewing experience

01 Grab wide shots that help set the scene and give a flavour of the location. Use these to provide a more interesting entry point.

02 The money shot. Don't neglect a straight view of a subject, as too many 'funky' angles in succession will quickly get tiresome.

03 Switching to a different angle ensures that the subject doesn't appear to jump towards the viewer when you cut to a tighter shot.

File sizes and frame rates

All new EOS bodies enable you to shoot 'widescreen' 16:9 Full HD 1080p video at a variety of frame rates, although they also offer HD 720p and Standard Definition footage at a 4:3 aspect ratio, should you want it – perhaps to shoot videos to show online. There are a range of frame rates to choose from too. The standard setting for regions where the TV format is PAL (Europe, Australia and China) is 25fps, while it's 30fps for regions that use NTSC (North America and Japan). You may also be able to set the compression method used.

The 5D Mk III offers an extensive range of resolution, frame rate and compression combinations

Choose high-capacity memory cards with a fast write/read speed for HD video

Shooting action

The majority of EOS cameras don't offer continuous autofocus when recording movies, but you can still capture action-packed footage – you just have to plan ahead. Ideally, position yourself so the subject will pass parallel to the camera; that way, you can lock the focus before you start recording and the subject should stay sharp throughout the sequence. Don't feel you have to follow a subject's movement with the camera though; you can give yourself more options when it comes to editing if you keep the camera stationary and allow the subject to pass through the frame. Avoid zooming while you're recording; it's easy to overuse the effect, but more importantly it can affect the exposure. Finally, keep the shutter speed between 1/30 sec and 1/125 sec when shooting moving subjects; any faster and movement won't look as smooth.
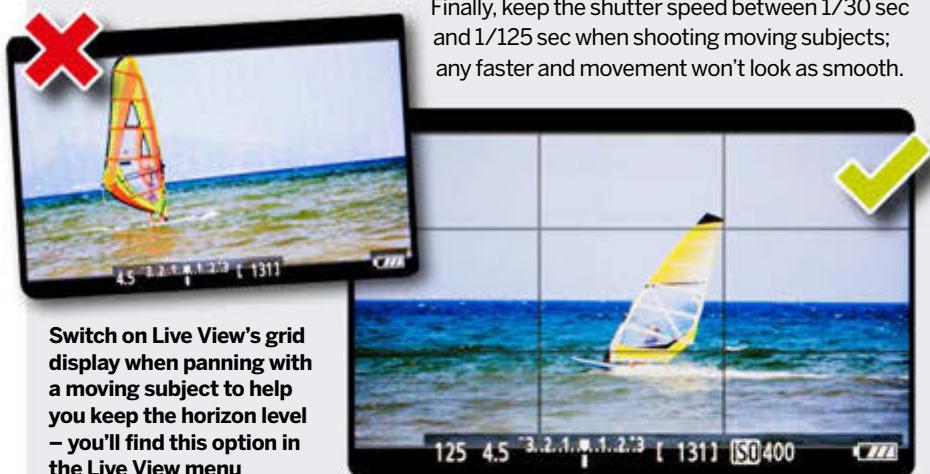
Switch on Live View's grid display when panning with a moving subject to help you keep the horizon level – you'll find this option in the Live View menu

If you're planning to pan the camera to follow a moving subject, select Stabiliser Mode 2 if you have the option – in this mode the IS system won't mistake the panning movement for camera shake

To break up extended footage of a scene, insert a cutaway shot – whether a wider view or a close-up – after a few seconds…

…Cutting back to a zoomed-in shot makes the cutaway clip feel less forced, and gives the sequence a more natural flow.

mode, so tracking moving subjects can be challenging. You'll need to manually focus or half-press the shutter release to autofocus before you start shooting (the focus indicator will turn green to show it's locked on), and then try and keep the camera at the same distance from the subject to keep them sharp. The new Dual Pixel CMOS AF sensor in the recently launched 70D is set to change all this, as it does enable continuous focusing for movies, along with touch focus on the rear screen that enables you to 'pull focus' from one part of a scene to another.

Finally, don't forget the sound. While it's easy enough to add a soundtrack in video editing software, it pays to try and get the best audio possible as you're shooting the pictures, even if it only ends up being used for background ambience. The small built-in mono microphone isn't much help; it might be okay at picking up someone talking close to the camera, but it's also equally good at picking up the hum of a lens's autofocus motor and your heavy breathing, and it's useless at long-range recording, especially if it's windy. For audio that's as crisp as your pictures, invest in a hotshoe-mountable stereo microphone. Most current EOS bodies have an audio jack for attaching a mic, although only top models like the 5D Mk III offer an additional headphone socket for live monitoring of sound levels. ■

Unlock extra functions

Your 'HD' camera is capable of capturing beautiful video footage, but it's built for stills photography primarily, and lacks some of the features of high-end video cameras. You can add video-specific features using a free software add-on called Magic Lantern (www.magiclantern. fm), which can be run directly from a memory card in your camera, adding features such as time-lapse, motion detection and various exposure and focusing tools. The software needs to be compatible with your camera's firmware, so make sure you download the correct version.

Note that you use Magic Lantern at your own risk – if your camera is damaged, you're on your own

5 hints and tips for…

Standard zooms

We highlight a Canon EOS camera or type of lens and provide priceless advice to get more from your gear

In association with…

1 Increase the ISO
Affordable standard zooms have only moderately wide maximum apertures, which can mean blurred shots due to camera shake or subject movement at the resulting slower shutter speeds. Up the ISO to combat this.

2 Prevent flare
Zoom lenses are prone to flare, especially those that range from wide-angle to telephoto, so fit a lens hood – this will also provide some protection for the front element should the lens get knocked.

3 Avoid extremes
It's rare that a zoom lens gives the sharpest results at its extremes, so try and stick to the middle of the focal range, and change your position to increase or decrease the size of the subject in the frame.

4 Background blur
The shorter the focal length, the harder it is to get a shallow depth of field. To maximise your chances, zoom to the longest end of the lens's range, choose a wide aperture and focus as close as possible.

5 Try before you buy
Canon's fast EF 24-70mm f/2.8L Mark II zoom offers peerless quality – but at a premium four-figure price. For a more affordable option, you can rent one from www. lensesforhire.co.uk for only £69 three days.

Canon Workshop

How can I set up and control my D-SLR faster?

Streamline your Canon with these time-saving tips and shortcuts

Photography is all about catching the moment, whether it's fleeting light across a landscape or a family portrait on Christmas day. If you're not ready for it, then you won't get the shot. Of course, your EOS digital SLR provides peace of mind where this is concerned. It can take care of focusing, metering, exposure and image processing in split-seconds. Does it always get everything right? No. Your camera doesn't know what you're trying to take a picture of and it can end up choosing settings that don't do the subject justice, such as an unsuitable aperture, shutter speed or ISO. It can struggle to focus in low light,

the lens 'hunting' backwards and forwards to find something to lock on to, and colours might look odd because a duff white balance has been selected.

For predictable, reliable results, you'll need to roll up your sleeves and get involved. However, scrolling through menus and dialling in settings manually can take time – time you may not have. Thankfully there are a number of ways in which you can strip your EOS back to a more manageable set of options and a few shortcuts that can make the difference between a winning shot and one that's destined for the wastebasket.

What's on the menu?

Take your camera's My Menu option. This 'shortcut' page lets you register up to six frequently used functions of the camera, enabling you to quickly access them without having to scroll through all the other menus. Handily, when you press the MENU button, your camera always opens up the last menu you were looking at. If you make sure that you always close the menus with My Menu selected, then this will be the first menu you see, shaving even more time off the process.

Many EOS D-SLRs include a Custom shooting mode (not to be confused with the Custom Functions menu). This enables you to save a snapshot of the current camera configuration, including the Exposure mode, White Balance and any particular Custom Functions, to the 'C' position(s) on the Mode dial (there will be up to three of these, depending on how advanced the camera is). This is a useful option, as you can instantly

C stands for Custom shooting mode – use this to create your perfect camera setup

"For predictable, reliable results, you'll need to roll up your sleeves and get involved"

return to a camera configuration you're familiar with. Even if you make adjustments to the settings while in C mode, these won't record over the default settings, unless you dip into the yellow Setup menu and save them there. If your camera offers more than one Custom shooting mode, you can produce different configurations for different shooting situations. For example, C1 could be your preferred setup for portraits, C2 could be for action, C3 for high-quality video shooting, and so on.

Button it

Custom shooting mode offers a fast way to return to a familiar camera setup, but what if you just want a quick way to adjust a specific shooting option? This is where the Quick Control Screen comes into its own. By tapping the 'Q' button on the back of the camera, you'll bring up a screen that summarises the current camera settings, from the shooting mode to the amount of AF points being used. This enables you to ▶

Learn to shoot smarter
Make life easier with these handy setup shortcuts

Quick Control
1 You can change many settings on the Quick Control Screen. Just highlight a function and turn the main control dial. However, this doesn't work for all options, including shooting mode, Custom Controls and White Balance Shift/Bracket.

Reviewing shots
2 On reviewing images, multiple screens can be cycled through by pressing INFO. Choose your favourite (we suggest regular brightness, with Highlight Alert activated) and this will be the default when you next press the Image Replay button.

SET button
3 The SET button has no function during shooting – what a waste of a prime position! We find it useful to make it repeat the function of a button on the left of the camera body, so you can access the function holding the camera in one hand.

Q button
4 A useful function is the way the Q button can be used to rip through the camera's menus. When you've pressed MENU, tap Q to flick to the first page of each coloured menu – it beats having to scroll through them all using the Main dial.

STEP BY STEP

How to customise your camera's controls
Change the function of key buttons to speed up picture-taking on your Canon EOS D-SLR...

Factory settings
1 The default setup might not to be your taste. However the functions of all the major buttons can be changed via 'Custom Controls' in the Custom Functions menu.

Pick your function
2 Highlight your preferred control and press Set to enter its customisation menu. The Set and (on higher-end bodies) MF-n buttons offer multiple options.

Streamline setup
3 During shooting, the INFO button provides a snapshot of camera settings. However, you can strip back some of this detail using the option in the yellow Setup menu.
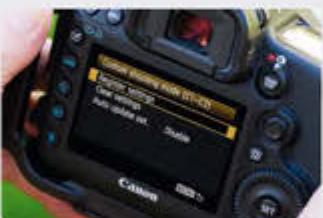
Save your settings
4 Some EOS bodies offer one or more 'C' settings on the Mode dial, which can be used to access favourite settings instantly. Save the current setup in the yellow Setup menu.

Canon Workshop

Menu fine-tuning

The menu system can be intimidating, but the colour-coding system helps: red is for shooting, blue for playback, yellow for general camera setup, while orange accesses Custom Functions. There are plenty of ways to fine-tune your camera using the options available, but here are three quick changes you can make to speed up your shooting workflow...
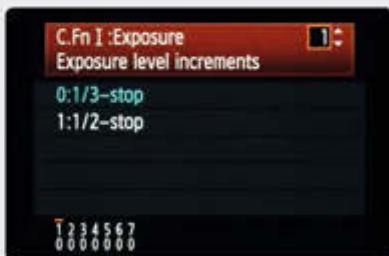
Exposure level
The default exposure level increment is 1/3 stops. This can be changed to 1/2 stops, making it faster to scroll through aperture and shutter speed settings, and to dial in exposure compensation.

ISO increments
Rather than having to scroll through the ISO sensitivities in 1/3 stops, you can opt for full stops instead, speeding up the selection process when setting the ISO manually (Auto ISO is unaffected).

My Menu
Save frequently used options here, for instant access at any time. You can change the order of this menu so that your favourite option appears at the top, so it takes even less time to make adjustments!

Exposure Bracketing

We daren't add up the hours we've spent poring over histograms and tweaking exposures (it's a lot). One way to cut the amount of time spent dialling in exposure compensation, checking the results, then dialling in a bit more is to let your camera handle it automatically. Use Auto Exposure Bracketing, found in the red Shooting menu, to take three (or more, depending on the camera) photos in quick succession, each at different brightness levels. The default sequence is zero exposure compensation, - compensation, + compensation, but this can be changed in the Custom Functions menu.

AEB: 0

Faster focusing

Set AF-ON to lock autofocus – useful when shooting in AI Servo if you don't want the focus position to be readjusted
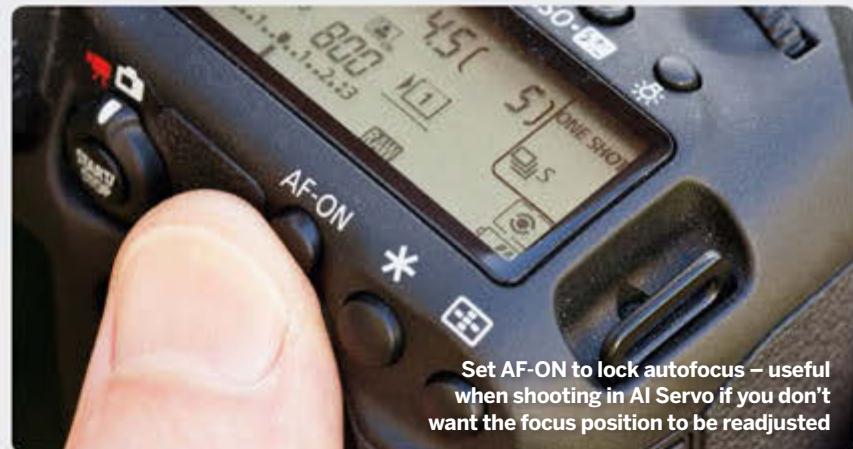
Canon cameras are renowned for their fast, accurate autofocus, but there are a number of ways in which you can speed up the process. Straight out of the box, your EOS D-SLR will be set to AI Focus mode, where the camera changes from One Shot to AI Servo once it detects movement, and vice versa. If you know the subject will be still or moving frequently, simply select the specific AF mode instead. Having all the focus points active and allowing the camera to choose which one(s) to use can also be problematic. If the AF point(s) illuminated in the viewfinder don't correspond with the position of the subject, you'll have to refocus until it does it. To speed this up, select a single AF point and place this over the subject before pressing the shutter release. You can choose an AF point that precisely lines up with the subject (as long as they're towards the centre of the frame) or use the more precise centre AF point, half-pressing the shutter release to lock the focus before recomposing the shot.

Having all AF points active can make it long-winded to choose a single point. Reduce the number available using the M-Fn button or Quick Control Screen

Canon Workshop

AEB: -1 STOP

AEB: +1 STOP

Playback shortcuts

Chimping – or checking the image after every shot – can seriously eat into your shooting time. While viewing the histogram alongside the photo can be useful, particularly when you're just starting out in digital photography, there's a playback shortcut that provides an at-a-glance guide to exposure. Activate Highlight Alert in the blue Playback menu and any areas of the picture that the camera determines are at risk of overexposure will blink on the rear screen. It's a much faster way to check exposure – if the areas flashing are where you'd expect them to be (in areas of washed-out sky, for instance), then carry on shooting.

make adjustments in one place, rather than having to trawl through the camera and make changes to individual settings.

There are also a number of ways in which you can adjust the functions of the buttons on your camera to help speed up your picture-taking workflow. The amount of information that the INFO button displays can be reduced, for instance, and if your camera has a RATE button, this can be switched from its standard rating operation when playing back your pictures to a one-touch

'protect' function, enabling you to prevent shots from being deleted.

You can completely redefine the operation of other controls – from the depth of field button on the front of the camera to the shutter release itself. You can even switch the function of a number of buttons off, so accidentally pressing them won't trigger a function you weren't expecting. In short, you can streamline your EOS D-SLR to be the perfect tool for *your* type of photography. ∎

Highlight alert — Enable
AF point disp. — Enable
Histogram — Brightness
Slide show
Image jump w/ — 10 images

Enable the Highlight Alert warning to quickly check for areas of overexposure

5 hints and tips for...

Tilt-shift lenses

We highlight a Canon EOS camera or type of lens and provide priceless advice to get more from your gear

In association with...

LensesForHire.co.uk

1 Straight verticals

Tilt-shift lenses are used by architectural photographers to get straight verticals on buildings where they would normally appear distorted. To do this, you need to adjust the Shift control, rather than the Tilt one.

2 Miniature effect

The Tilt control enables you to increase the sharpness through the image. However you can also use this control to reduce the depth of field and create the fun and popular miniature 'toytown' effect in-camera.

3 Go independent

Not all tilt-shift lenses allow you to adjust the tilt and shift mechanisms independently. Doing so means you can achieve both straight verticals *and* include more in the frame.

4 Start neutral

Before you start shooting with a tilt-shift lens, make sure the dials on the lens are in the neutral position. Don't worry if things look cropped out in the viewfinder, as you'll be making adjustments later.

5 Try before you buy

Tilt-shift lenses aren't cheap – Canon's EF 17mm f/4L is a whisker under £2k. However, you can rent this from LensesForHire.co.uk for £69 for three days – a much more sensible option!

Canon Workshop

How do I set up my Canon D-SLR for night photography?

Don't put up with blurred, washed-out shots when the light drops...

Photography's all about catching the light or, to quote an old landscape photography chestnut, 'chasing' it. But what do you do when there isn't much available – and what settings should you choose to make the most of it?

When you're taking photos at night, the two biggest challenges come in the form of focusing and exposure. Your camera's autofocus system requires a certain level of illumination to be able to work effectively, while exposure times can stretch from multiple seconds to many minutes and beyond. Both of these factors present

problems for achieving sharp pictures, and it's likely that you'll need to adjust settings manually to get the best results.

With little light available, there are two options when it comes to creating exposures in the dark: making the most of slow shutter speeds with the camera mounted on a tripod, or adjusting the camera settings to get fast shutter speeds for sharp handheld pictures. If you're handholding the camera, you'll need to select the widest aperture on your lens to let as much light in as possible – use Aperture Priority (Av) or Manual (M) exposure mode

for direct control over the aperture and dial in the smallest f-number available, such as f/4 or f/2.8. This may still leave you with a shutter speed that's too slow for sharp handheld shots, in which case you'll need to increase the ISO. Press the ISO button and turn the main dial until the shutter speed is equivalent to 'one over' the effective focal length of the lens being used, such as 1/50 sec for a 50mm lens on a full-frame camera.

Don't be shallow

The downside of this approach is that, thanks to the large aperture, you'll be working with a reduced depth of field and less of the picture will appear sharp. Image quality also gets quite choppy at very high ISOs, however, a sharp, noisy picture is better than no picture at all. In fact, if you're using an image stabilised lens, you can afford to use a slightly lower ISO setting, and by working in brightly lit areas and bracing the lens against a wall or lamppost or other sturdy item, you should be able to get excellent results.

If you're using a tripod, the length of exposure doesn't matter as the camera won't be moving. You're free to choose both low ISOs for the best quality, and narrower apertures to make more of a scene appear sharp. Obviously, the longer the exposure, the greater the risk that any moving part of your scene will be recorded as a blur. Many photographers use this to their advantage when taking pictures at night, allowing car headlights, funfair rides and fireworks to register as colourful streaks in the shot. Using Av mode, take a number of exposures

Use Live View to literally see in the dark – it makes composition and focusing a breeze

"Instead of relying on the hit-or-mainly-miss performance of autofocus, switch to manual focus"

at different aperture settings – you'll find that one shot has the 'perfect' degree of blur compared to the rest.

Focusing at night can be a source of frustration too, particularly if you've come to rely on your camera's autofocus. In low light, the lens will focus backwards and forwards looking for something to lock on to, even when you've manually selected a single AF point that lines up with the important part of the scene. There's every chance that it won't be able to focus accurately. It can be difficult to tell if the image is sharp or not, so check the focus indicator (the green circle in the bottom of the viewfinder). If it's flashing, it means the picture may be blurred.

A shot in the dark

Instead of relying on the hit-or-mainly-miss performance of autofocus in the dark, switch to manual focus (MF) and use Live View for consistent results. The illuminated Live ▶

Low-light camera settings

Typical camera functions you'll need to keep an eye on when shooting at night

Auto white balance

When you're shooting in mixed lighting, such as in a city at night, it's often easier to leave the white balance set to AWB as this usually produces a good balance of the various light sources.

To emphasise the cool blue tones of a moonlit landscape, try using the Tungsten white balance preset

Narrower apertures

Narrow apertures (high f-numbers, such as f/16 shown here) give plenty of depth of field, but they do result in slower shutter speeds and the potential for blurred shots. However, a wide-angle lens used at a fairly wide aperture (such as f/5.6) offers a good compromise.

Slow shutter speed

Longer exposure times are generally required to make an exposure at night, such as 5 secs shown here. At this speed you'll need a tripod, or dial in a wider aperture and/or higher ISO for a quicker exposure.

Low ISO

The lower the ISO, the less chance there is of noise appearing in a shot (although there is still a risk with longer exposure times). The downside is slower shutter speeds, so increase the ISO to enable a shake-free shot when shooting handheld.

Raw format

Switch to Raw for night photography. The files will show more noise than JPEGs, which have Noise Reduction (NR) applied, but you'll have more subtle control over NR in software such as Adobe Camera Raw.

STEP BY STEP

How to deal with hot and stuck pixels

High ISOs and long exposure times can exacerbate the problem of dodgy pixels – here's how to fix them

Reveal the problem

1 When you zoom in on images taken at night, you may spot one or more bright white or coloured pixels in the same position in each shot. These are likely to be hot or stuck pixels on the sensor.

Remap the pixels

2 Your camera can detect where these pixels are and 'remove' them from pictures as you take them, but you'll need to 'remap' the sensor first. Switch off the camera, remove the lens, and fit the dust cap on the body.

Manual cleaning

3 Head to the Sensor Cleaning option in the yellow Setup menu. Select Manual Sensor Cleaning and run this for about a minute with the body cap in place. Switch the camera off then take a test shot.

Shoot Raw

4 If the problem persists, try again. Ultimately, you may have to send your camera in for repair. Alternatively, shoot in Raw and open the images in Adobe Camera Raw, which removes the worst stuck pixels automatically.

Canon
Workshop

Essential gear

There are several accessories that make night photography easier. Take more memory cards than you think you'll need (especially if you're doing more experimental photography, such as shooting car light trails) and make sure your lenses are fitted with hoods – the light from street lamps or even a full moon can cause flare in a picture, just as the sun does in daylight.

Tripod

You'll need one of these for long-exposure work in low light. It can be hard to judge if the setup is level in the dark, so activate the built-in electronic level (by repeatedly tapping the INFO button on recent EOS bodies) to fine-tune the framing.

Spare battery

Extended exposures, prolonged use of Live View and cold conditions drain batteries quickly, so keep a spare in a warm pocket when shooting at night. Check battery capacity in the yellow Setup menu.

Torch

Although you can use the built-in light to check settings on the top LCD screen in the dark on some models, this reduces battery power. Use a torch to help you make adjustments instead. A powerful torch can also be used to illuminate part of a scene in order to give the camera's AF system something to lock on to, as well as for light-painting.

Welcome to shooting stars

In addition to controlling how much light enters the lens and determining depth of field, the choice of aperture also affects how lights are portrayed in a shot taken at night. At wide apertures, street lamps can be captured with a simple circular glow, but dial in a narrow aperture (eg f/22) instead and you get an appealing starburst effect. This is caused by light diffracting around the edges of the aperture blades in the lens. We say 'appealing', but if you find the effect distracting then simply choose a wider aperture to reduce it (eg f/8).
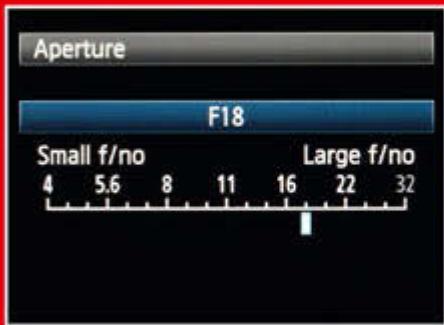
Narrow apertures are indicated by large f/numbers and give lights a star-like glow

Dealing with noise

At night, you're likely to use long exposure times and/or high ISO settings, both of which increase the amount of noise. High ISO Noise Reduction is applied to all images, unless you manually override it in the red Shooting menu or Custom Function menu (depending on your camera model). There are four settings: None, Low, Standard and High.

Long Exposure Noise Reduction is also available. Set to Auto, this kicks in at exposures that last a second or more. It removes noise by taking a 'black frame' exposure, determining where the noise appears, and then applying noise reduction to the original shot. However, it takes the same amount of time to create the black frame exposure as it does the main image, eating into both shooting time and battery life.

HIGH ISO NR: HIGH

HIGH ISO NR: OFF

The strongest setting smears subtle details as it smooths the noise away
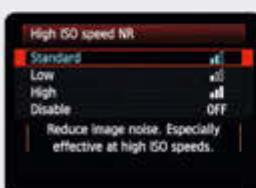
With Noise Reduction disabled, JPEGs are peppered with a sheen of gritty noise

By default, your EOS has High ISO Noise Reduction at the Standard setting

f/5.6

f/18

A fairly wide aperture captures the street lights as diffuse, glowing orbs

At narrower apertures, lights appear as sharply defined starbursts

Go Manual

As light levels drop, it makes sense to switch from Aperture Priority (Av) to Manual (M) exposure mode to set both aperture and shutter speed, for a consistent exposure as you try different compositions. With the camera on a tripod, set a narrow aperture of f/11-f/16, then change the shutter speed until the mark on the Exposure Level Indicator shifts to the middle.

The slowest shutter speed you can freely select is 30 secs. For longer exposures (indicated by a flashing '30'), you'll need to change the mode dial to B for Bulb (or move the shutter speed 'beyond' 30 secs on some models). This enables you to keep the shutter open for as long as you keep the shutter release pressed – it's for this reason that a lockable remote release is essential.

View screen makes it much easier to find the focus sweet spot: simply position the white frame over the area you want to focus on, tap the magnification button to zoom in to the image and then tweak the focus ring on the lens until it the image appears sharp. This is a brilliant feature when you're using the camera on a tripod, as you know the focus will stay locked in position. But what if you're using the camera handheld? In this case manual focus with Live View becomes too fiddly and you may have to switch back to autofocus. However, there are some ways you give your camera's AF system a fighting chance in the dark.

For instance, you could try and lock focus on a brightly lit area that's roughly at the same distance as the focal point of your picture. High contrast edges are what you're looking for, such as the bulb in a street lamp against a dark background. If you're photographing a night-time portrait, use the pre-flash focusing aid of the camera's pop-up flash. If this is too distracting, or your EOS D-SLR doesn't have a flash, then attach a Canon flashgun that has an infrared autofocus beam. It's not going to allow you to keep a fast-moving subject in focus, but it will at least get the focus bang-on for subjects that are within range. ■

5 hints and tips for...

Wide-angle lenses

We highlight a Canon EOS camera or type of lens and provide priceless advice to get more from your gear

1 Distortion
Wide-angle lenses offer a less distorted view than ultra-wides. But at wide apertures the corners of an image may appear darker than the centre, so activate the Peripheral Illumination Correction function.

2 Tripod setup
When you shoot with a telephoto lens on a tripod, you point one leg forwards, so it's under the lens for additional support. Do the reverse with a wide-angle lens, to prevent a leg appearing in the shot.

3 Crop factor
If you use an SLR with a smaller APS-C sensor then you'll need to multiply the lens's focal length by 1.6 to get the 'effective focal length' (EFL); a 24mm lens on APS-C offers the equivalent of a 39mm EFL.

4 Portraits
A wide-angle lens allows you to shoot a portrait that shows a person in their environment. But try and shoot at the subject's eye-level – a lower or higher position can lead to unflattering results.

5 Try a prime
Fixed-focal-length wide-angle lenses offer exceptional quality compared to zooms, and have much 'faster' wide maximum apertures. They're not cheap, however, with Canon's EF 24mm f/1.4 L II USM costing around £1,300.

Canon Workshop

How do use my in-camera Creative Filters?

Give your pictures a digital makeover without going near a computer – here's how to get the most from Creative Filters

With the flexibility that comes from shooting Raw and the power and boundless possibilities offered by Photoshop, it might seem a strange choice to add digital effects to your pictures in-camera. But there's a lot to be said for saving yourself some time sat in front of a computer, as well as the enjoyment that comes from trying a new way of shooting.

Digital 'filters' have taken the world of smartphone photography to new hipster heights, and they're making a bit of resurgence on D-SLRs too. Canon's Creative Filters have been a fixture on EOS cameras since the 60D arrived almost a little over three years ago. You won't find them on pro-grade bodies like the 5D Mark III or the 1D X, but they're available as an editing option in the playback menu of the majority of other D-SLRs. These filters are not the optical variety that sit on the lens or drop in front of the sensor, but rather a collection of in-camera processing effects that can be applied to pictures – with permanent results. You see, unlike picture styles and white balance, whose effects can be adjusted later in

Creative Filters can be applied in any shooting mode – from fully automatic to manual

Canon's Digital Photo Professional if you shoot Raw files, Creative Filters can't be changed in software. The effects can only be applied in-camera, and the results have

to be saved to the memory card as JPEGs. There are two ways to work with Creative Filters: either during playback on pictures you've already taken or on pictures you're about to shoot using Live View. The first option is the most widespread and offers the most flexibility, as any 'filtered' image is always saved as a separate file. Because your original image is left untouched, you're free to save as many different variations as your memory card can take, each with a different strength of filter effect or combination of effects – Creative Filters can

"Using Creative Filters during Live View enables you to preview the effect in real time"

Canon's Creative Filter camera controls

Thinking of adding a filter effect? Here are the key settings you need to use...

1. Live View
Use this to preview a filter effect before you take a picture. Not all EOS D-SLRs enable you to do this.

2. White icon
The Creative Filters menu icon needs to be white in order to apply an effect – a greyed out symbol means that the image is incompatible.

3. Image preview
You can preview the effect before deciding to save it.

4. Filter flavours
The amount of filters available is dependent on the camera model. The Canon 100D shown here offers seven effects, along with the option to switch them off.

5. Adjustments
During playback, highlight a filter and then tap the SET button to be able to tweak the strength or position of the effect. When you're using Live View, pressing the INFO button has the same effect.

6. Q/SET button
Use this to bring up the Creative Filters option in Live View, and to select a filter option.

7. Play button
Press this to review your images and then tap the Q button to choose a Creative Filter.

be cumulatively applied to a single image. When you're reviewing images on the rear screen, tap the Q button to access the editing display. It's here that you'll find the Creative Filters option. Alternatively, select Creative Filters in the camera's blue playback menus and scroll through your images until you've found a suitable picture. It's then a matter of selecting the effect, adjusting its strength and then saving the worked-up version as a new file on the memory card. You can apply Creative Filters to both Raw files and JPEGs, although you will be unable to do so on an image that you've previously cropped.

Before and after
Using Creative Filters during Live View brings the advantage of being able to preview the effect in real time. This enables you to compose a picture to make the most of the filter – such as finding the perfect angle for the model village look when using the Miniature Effect – rather than having to make do after the event. The downside of this is that you have to shoot JPEGs in order to access the Creative Filter option on the Live View screen, and that means the effect of the filter is embedded in the picture file when you press the shutter release. There's no going back if you don't like what you see. Still, it brings back some of the edge-of-your-seat immediacy to taking pictures!

Not all cameras offer this Live View preview, and if you happen to use a Canon D-SLR that predates the 60D then you won't have any onboard Creative Filters at all. ▶

STEP BY STEP
How to preview a Creative Filter
Use Live View on the latest Canon D-SLRs to see a Creative Filter effect before you shoot

Enter Live View
1 Press the Live View button and then either tap the Q button or press INFO repeatedly until the menus appear on the screen. The Creative Filter icon has the two overlapping circles.

Use the right format
2 You won't be able to apply the effect in the Raw or Raw+JPEG format. If you shoot Raw, you can save a separate JPEG with the effect applied once you've taken the shot.

Select a filter
3 Shooting JPEG, you can freely select a Creative Filter. Scroll through the options using the arrow keys or Quick Control dial, then tap SET to select your preferred filter.

Preview the effect
4 Pressing INFO enables you to change the position or strength of the effect, depending on which Creative Filter you pick, but it can take time for the screen to update.

Canon
Workshop

Filters in action

The latest crop of Canon cameras (100D, 700D, 70D) have seven Creative Filters, each of which can be increased or decreased in strength (over three steps) or adjusted in position. We've suggested subjects that each of the filters works particularly well with, but experiment to find an effect or combination of effects that works for you.

Grainy B/W

This filter takes a hammer to the more subtle results that can be achieved through the Monochrome picture style. However, the punchy-but-gritty look works well for street photography and architecture. Whether you can accept the dappling it adds to areas of clean pale tone is another thing.
Adjustable option: the level of contrast can be increased or decreased from the Standard setting. Highlights and brighter areas are likely to burn out at the highest setting – that is, they'll be so bright they won't hold any detail.

BEFORE

AFTER

Fish-eye effect

It's no substitute for a good quality fish-eye lens, but at least it's free. The Fish-eye filter produces a super-distorted view of the world, causing straight horizontal and vertical lines to distort and bulge outwards. It's an effect that's best used in moderation – but in all honesty it's an effect that you'll tire of quickly.
Adjustable option: you get the familiar Standard, Low and High settings here. The higher the setting, the more of the available image you lose around the edge of the frame.

BEFORE

AFTER

Water painting effect

Turn your photos into works of art; or at least, reduce the details in your photos to black outlines with subtle colours that bleed beyond these edges. Pick a scene or subject with strong edges to make the most of this filter – landscapes, city scenes and other views you'd normally associate with watercolour paintings lead to the most convincing overall effect.
Adjustable option: the colour density can be set to Standard, Light or Deep. Avoid the Deep setting if people feature in the frame.

BEFORE

AFTER

Toy camera effect

BEFORE   AFTER

If you're looking for a colour shift typical of old film and dark corners that you'd get from a cheap plastic lens, this is for you. Alongside the Miniature filter, we feel this is one of the most successful options available, producing an effect that suits a wide range of subjects, from portraits to cars to fruity still lifes.
Adjustable option: you can alter the tone of the colour cast across the image, from Standard (slightly warm) to Cool or Warm (a bit sickly yellow, really). Standard offers the most 'natural' looking results.

Soft focus

Does exactly what it says on the tin, giving a hazy look to pictures. Portraits are a natural fit for this filter (even the icon shows a glowing figure), but still life work and landscapes can benefit from the dreamy quality it gives to pictures.
Adjustable option: as with most of the other filters, the strength of the effect has three settings – Standard, Low or High. And, as with the others, you need to be wary of the highest setting as it can end up looking as though you failed to focus properly.

BEFORE

AFTER
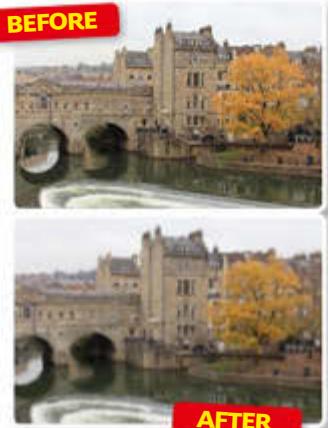
Art bold effect

This strong dose of saturation produces vivid, hyper-real colours. Images that are colourful to begin with benefit most with this filter, but scenes that feature a single colourful focal point – such as red poppy in a field – can look good. Just avoid shots of people with this filter...
Adjustable option: if you're looking for a bold effect, you're unlikely to use the Low setting, so stick with Standard. The High option inflates the warmth of reds and oranges to nuclear dawn levels.

BEFORE

AFTER

Miniature effect

This mimics the toytown look that can be created when a tilt-shift lens is used 'incorrectly' and a wafer-thin depth of field is created. It's most effective if you can find a subject that could conceivably be a model and shoot it from a raised position. Warning: this filter can be addictive.
Adjustable option: you're unable to adjust the strength of the Miniature effect, but you change the position of the sharp area in the picture.

BEFORE

AFTER

Multiple filters

If the strongest setting for a filter isn't extreme enough for you, you can double the impact by applying it more than once. This works well with the Miniature effect, allowing you to really intensify the degree of blur. However, you have to build up the effect in stages, saving the image after applying a filter, then opening up that image and applying it again. Carrying out this process many times can reduce the overall quality of the picture.

When you select the Creative Filters option in the playback menu, only the files that are compatible will be accessible.
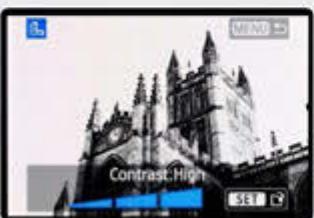
After cranking up the Grainy B/W filter to its maximum level, we save a new version of the image by pressing SET.
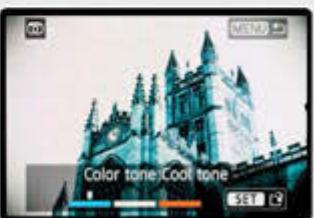
Scroll through the images to find the previously filtered one in order to add another effect (Toy Camera here).

Repeating the same process, we finish off with the Miniature effect, positioning the area of sharpness near the clock face.

The 60D introduced four in-camera filters, with the 600D taking that total to five: Fish-eye, Grainy B/W, Soft focus, Toy camera effect and Miniature effect. Later bodies, like the 100D, added the painterly Art bold and Watercolour effects to the mix. Using them is straightforward, but getting the best out of them is another matter. Naturally, some filters are more suited to certain scenes than others. For instance, far fewer subjects can take the overcooked colours of the Art bold effect than those that

suit the more subdued and classier Toy camera effect. Most of the Creative Filters have three levels of adjustment – Low, Standard and High – but the default Standard setting generally gives the most pleasing result. We find that some of the more extreme effects, such as Fish-eye and Soft focus, benefit from being dropped to the lowest setting for a more subtle result, but it's ultimately a matter of taste.

Talking of taste, these types of D-SLR digital filters often get a hard time for being

'amateurish'. While there's no denying that one or two are garish, we think it's a good idea to have them available as a creative option – after all, you don't have to use them if you don't want to. With some white balance adjustments and picture style tweaks they can produce some surprisingly effective results, perfect for quickly sharing online, and they're also a great way for kids to have fun with digital photography. ∎

5 hints and tips for...

Superzoom lenses

We highlight a Canon EOS camera or type of lens and provide priceless advice to get more from your gear

1 Zoom creep
If you're looking to buy a new superzoom, choose one with a Zoom Lock switch. This will prevent the lens from zooming out towards its telephoto end when you're carrying the camera over your shoulder.

2 ISO setting
Superzooms have slow maximum apertures, so you'll need a faster shutter speed to combat camera shake. Use your camera's Auto ISO setting to automatically take care of this by increasing the ISO.

3 Image Stabilization
A stabilised lens improves your chances of getting sharp shots at longer focal lengths. Switch this function off when you shoot from a tripod though, as the results tend to be crisper.

4 Better focusing
The narrow maximum aperture can cause issues for your camera's autofocus system, and it may 'hunt' for something to lock onto. Try using manual focus in conjunction with Live View's magnification function.

5 Using filters
A clear UV filter can help protect the lens's front element, however keep an eye out for vignetting – dark corners in the picture – when you're using more than one filter and shooting at the wide end of the lens.

Canon Workshop

PROBLEM #10

How do I use my camera's HDR mode?

High dynamic range photography allows you to capture more detail in your photos. Here's how your Canon D-SLR can do it all for you...

Faced with a high-contrast scene, your D-SLR can struggle to produce an exposure that ensures detail is recorded in all parts of the picture, from the brightest highlights to the deepest shadows. The reason for this is that the sensor inside your camera can only squeeze a range of brightness levels into a single picture. This is often referred to as a sensor's 'dynamic range'. When the dynamic range of the scene you're taking a picture of exceeds that of the camera sensor, compromises have to be made. Photograph a landscape on a sunny summer day, for instance, and you may have to choose to show detail in dark areas and let the bright areas become too bright and overexposed, or expose for the highlights and lose all detail in the shadows.

There are a number of ways to bring the dynamic range of a scene within the dynamic range of the sensor. For instance, in landscape photography a graduated neutral density filter is often used to tone down a bright sky, bringing its exposure level closer to that of a darker foreground and enabling you to record detail in both. When shooting someone against a bright

HDR Backlight Control is an option available in the Special scene (SCN) modes of compatible cameras
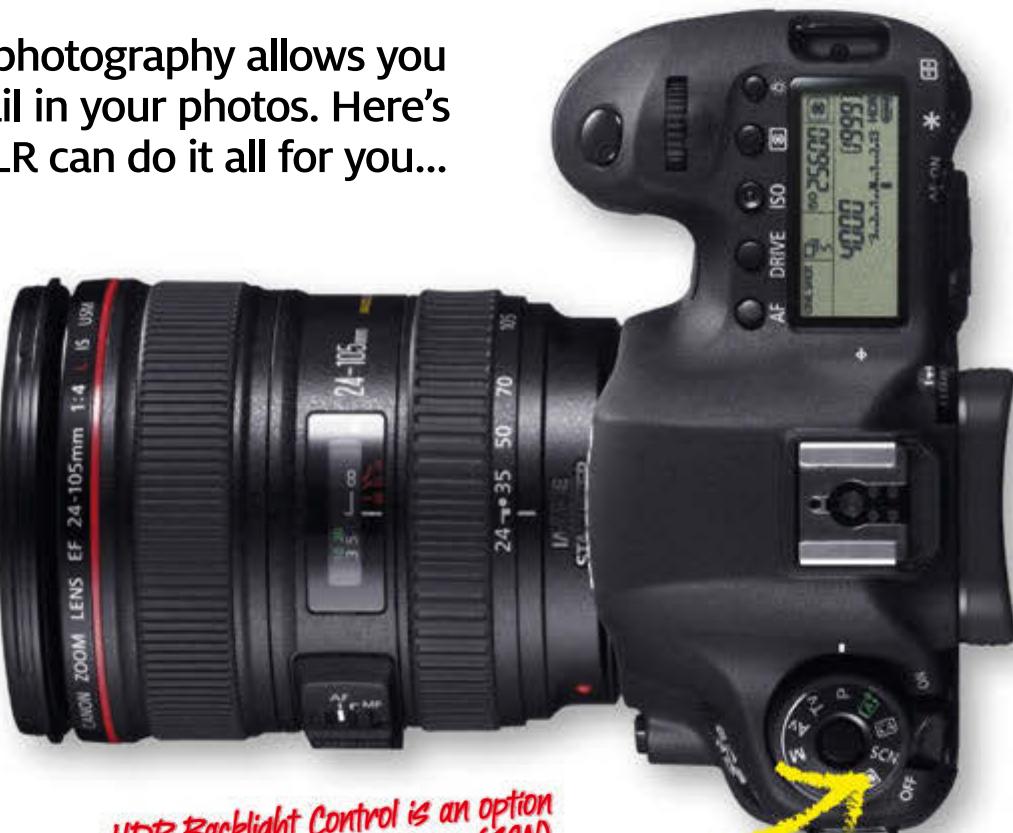
background, a burst of flash can produce a more balanced exposure. Without it, the contrast of the scene may be too great for the sensor and you would have to choose between a well-exposed subject and a featureless background, or a well-exposed background and a silhouetted figure.

"The 6D has a more sophisticated 'HDR Mode', which it shares with the higher-spec 5D Mark III"

Out of the shadows

EOS cameras have a number of features that can automatically correct high-contrast scenes, including Auto Lighting Optimizer (ALO) that's available as a menu option on all current Canon bodies. ALO is applied to JPEG pictures as they're saved to the memory card, although it can also be used on Raw images when they're processed in Canon's Digital Photo Professional software. Essentially, ALO uses selective tone curve adjustments to tweak the shadows and highlights, similar to the Curves adjustment in Photoshop. It's dead

useful for opening up darker areas, although highlights can become a little 'hot'.

A more effective way of extending the dynamic range of a photo is to take a number of frames using a different exposure setting for each one, then combine the best bits of each in software like Photoshop. You can use Exposure Compensation to brighten or darken each shot, or let the camera do it with its Auto Exposure Bracketing (AEB) feature.

However, there is an alternative: High dynamic range (HDR) mode. In this setting, your camera will take three continuous frames: one for the highlights, one for the shadows and one for the midtones, and then automatically blend these into a single JPEG, which is saved to the memory card.

HDR is an in-camera feature that's becoming increasingly common on Canon cameras, from beginner-level to semi-pro. The 100D, 700D and 6D have an 'HDR Backlight Control' option available as part of the Special scene (SCN) setting on the mode dial. Being part of Canon's 'Basic Zone' of shooting modes means that you get limited control over the final outcome – simply press the shutter release and the camera will take care of the shooting settings.

The 6D also has a more sophisticated 'HDR Mode', which it shares with the higher-spec 5D Mark III. Disabled by default – activated via the red shooting menus – HDR Mode gives you more control over how wide the dynamic range will be in the final picture and whether the individual frames will be ▶

Why HDR? In HDR Mode, the camera takes three different exposures…

High dynamic range shooting enables you to produce a picture with a greater tonal range than is possible in a standard photo. The image is saved as a JPEG, even if you've set the Picture Quality to Raw, so you'll need to make sure that image processing options, such as white balance and picture style, are set correctly before you shoot.

Highlights
An underexposed image ensures that detail is visible in the brighter areas of the picture

Midtones
A standard exposure records detail in the midtones, at the expense of shadows and highlights

Shadows
An image exposing for the shadows in the foreground means that detail in the rest of the picture is lost

Final HDR photo
HDR mode then combines the best bits of each exposure to produce a single image with detail visible in all areas. If the colours are flat, try setting the Landscape picture style and taking another HDR shot…
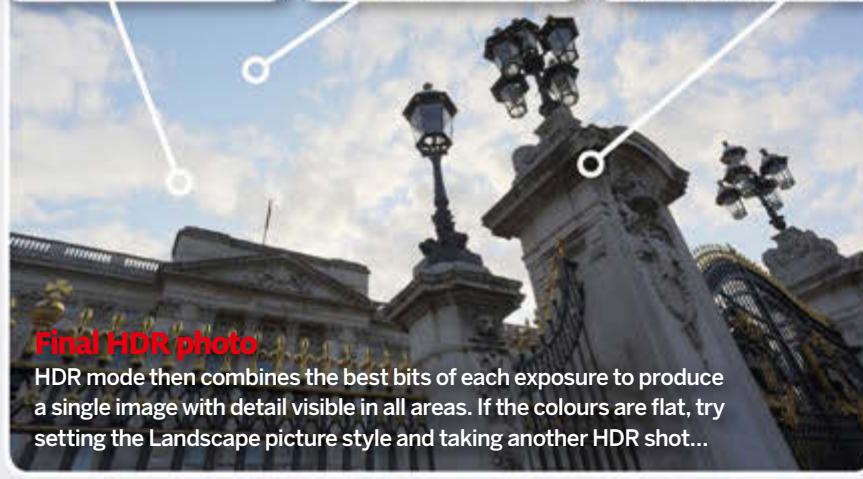
STEP BY STEP
How to use HDR Mode on Canon D-SLRs…
Use the more advanced options on the 5D Mk III and 6D for more control over the in-camera HDR conversion
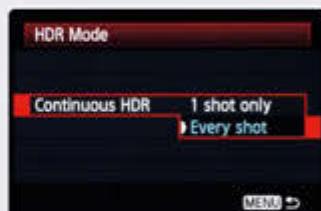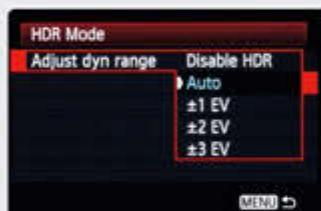
Set HDR Mode
1 Unlike HDR Backlight Control, HDR Mode isn't on the camera's top dial; you'll find it in the red shooting menus. The 5D Mark III offers quick access to this mode by pressing the Creative Photo button, above.

Adjust the range
2 You can change the parameters of the HDR conversion, including how wide the dynamic range is. Select up to 3 stops of exposure difference, depending on how much shadow or highlight detail you want.

Set default mode
3 You can set the camera to return to normal shooting once you've taken an HDR shot, or to keep HDR Mode active. The camera takes three shots in quick succession even if you're shooting in single drive mode.

Save the originals
4 The source images will also be saved to the memory card when you shoot with the 5D Mark III, although you can also opt to save the HDR JPEG alone. Shooting with the 6D, you only end up with the final image.

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How to solve HDR problems

On the surface, in-camera HDR photography is pretty straightforward – the camera takes three pictures and combines them into one. The display indicates when you're using HDR Mode, and handily flashes 'busy' on the screen while it processes the image (this can take a little time). However, there are some situations where the results may not be quite what you expected…

MOVEMENT

Whether it's an active subject or camera shake, any movement recorded when you're shooting the HDR source images will cause problems when the exposures are merged. The answer is to pick a subject with care. Use a tripod and choose a higher ISO setting to give you a better chance of stopping any motion, although even this may not produce a fast enough shutter speed to do so.

Adding art effects
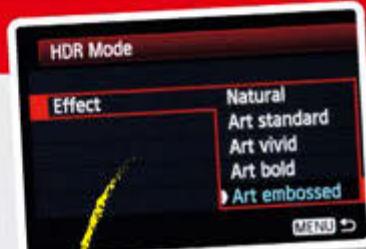
HDR pictures can look a little subdued, as the shadows and highlights have been respectively opened up and reigned in, flattening the contrast. The 5D Mark III's HDR Mode offers an Effects menu that attempts to add some impact to these exposures. There are five options: as you'd expect, Natural gives the most subtle results, while four 'Art' settings give different 'painterly' finishes. Despite some of these delivering 'nuclear dawn' levels of HDR – Art Embossed looks particularly shocking – Art Vivid does a good job of pepping up an image shot on a dull day.

NATURAL

ART STANDARD

ART BOLD

ART VIVID

ART EMBOSSED
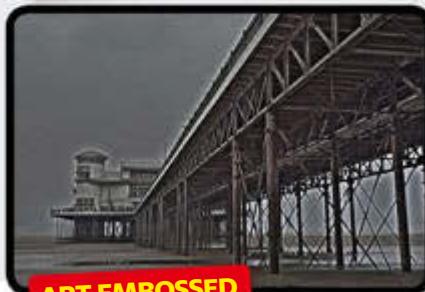
Better exposures

Although HDR Mode is effective, it can't work miracles. Faced with subjects or scenes that show excessive contrast, such as a strongly backlit silhouette, it will struggle to balance the exposure. You can use exposure compensation to try and skew the brightness levels of the source images, making them brighter or darker overall, but faced with these situations it's often better to bracket the exposures manually instead of using in-camera HDR, then combine the shots later. This also gives you the freedom to shoot more than three frames in order to build the final image, for more subtle transitions between light and dark areas.

CROPPING

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HDR Mode

Auto Image Align   Enable
                    ▸ Disable

MENU ↩

When the three source images are aligned, you'll lose details at the edge of the picture, as shown here. Compose your shot a little wider than normal to take this into account. HDR Mode on the 6D and 5D Mark III has an option to disable automatic alignment, so what you see is what you get. However, you'll need to put the camera on a tripod to ensure there's no movement between frames.

Grey matter

When you enter either of Canon's HDR modes, a number of the camera's options will be unavailable. For instance, in HDR Backlight Control, you won't be able to select Raw or Raw+L Picture Quality – only JPEGs. Set HDR Mode on the 6D or 5D Mark III, and the camera menus become littered with unselectable greyed-out options. For instance, Auto Lighting Optimizer, Highlight Tone Priority or Exposure Simulation (in Live View) will all be deactivated.

📷 AF ▶ ✦ ⚙ ★
▪▪▪▪   SHOOT3
Picture Style   Standard
Long exp. noise reduction   OFF
High ISO speed NR   ▫▫
Highlight tone priority   OFF
Dust Delete Data
Multiple exposure   Disable
HDR Mode   ±1 EV

In HDR Mode many shooting options become unavailable

aligned automatically or not. The 5D Mark III also gives you the option to add art effects, supposedly to create photos that resemble paintings, and enables you to save the three 'source images' in addition to the final picture. This is handy, as it means you can manually blend the images in software if you feel the camera hasn't got it quite right.

HDR Mode is a painless and fairly quick way to get results that reveal more detail than a single exposure can, although you'll need to take some precautions to make the most of it. Your camera needs to be kept still while the three exposures are taken, otherwise any movement between the

frames will cause problems when they're combined. A tripod will help here, as can a fast shutter speed. When shooting handheld, you may need to choose a wider aperture and/or increase the ISO setting in order to achieve a shutter speed fast enough to prevent camera shake. It's for this reason that HDR Mode isn't a good fit for action photography, as any subject movement will show up as a ghostly outline in the finished image. Landscapes, portraits, close-ups and still-life subjects are much more suited to the in-camera HDR treatment.

Colours may be not look totally natural in HDR Mode – what looked punchy and

vibrant in a single standard exposure can appear muddy in the combined image – and the process of blending dull highlights and perky shadows means that contrast also takes a hit. However, although HDR pictures can look flat at least they hold bags of detail. ■

5 hints and tips for...

Full-frame lenses

We highlight a Canon EOS camera or type of lens and provide priceless advice to get more from your gear

1 Compatibility
EF lenses are designed to work with cameras with full-frame sensors, but are fully compatible with smaller APS-C sensors. You'll need to multiply the focal length of the lens by x1.6 to work out the 'effective' focal length.

2 Wide-angle woes
The sensor size has a negative impact when using a wide EF lens on an APS-C camera: a 24mm EF lens gives roughly the same angle of view as 40mm lens. When it comes to choosing a wide EF lens, go wider than you think you'll need...

3 Tele advantage
...this magnification effect is a bonus for long lenses. A 70-200mm lens on an APS-C camera delivers the same view as 112-320mm on a full-frame camera, while a 500mm telephoto lens effectively becomes a whopping 800mm!

4 Full frame
Using an EF lens on a full-frame camera means that not only do you get the full picture when shooting wide-angle pictures, you can also achieve shallow depth of field effects more easily – great for producing pro-looking portraits.

5 L for Luxury
For the ultimate quality, look for an 'L' on the lens and a red ring around the barrel. This denotes Canon's luxury (albeit expensive) range of EF lenses, which are built to the very highest standards, featuring tip-top optical and autofocus performance.

PROBLEM #11

How do I set my camera up for close-ups?

Master the art of macro focusing and get to grips with depth of field to improve your flower photos

Close-up photography can be technically demanding, often requiring specialist equipment and forensic attention to focusing, aperture and shutter speed. Although it may be tempting to let the camera take care of everything in its point-and-shoot Close-up mode (indicated by the flower icon on the Mode dial), the results are unlikely to do justice to the subject of your picture. Your EOS sets a fairly wide aperture in order to blur the background, and chances are parts of the subject that are further away from the camera will also be blurred. The shutter speed is also set automatically in order to avoid camera shake. If light levels are low and a fast shutter speed isn't possible, then the camera may increase the ISO or activate the pop-up flash. Neither of which will give you a particularly high-quality image.

Flower power

In order to capture consistently good close-ups of flowers and other macro subjects it's far better to select Aperture Priority or Manual instead, for full control over the choice of aperture – which has a significant impact on the look and feel of a close-up shot – as well as enabling you to choose the optimum ISO and kill the flash. Your choice of focusing and depth of field

Use Aperture Priority mode (Av) or Manual (M) to set the aperture and control the depth of field

are also crucial if you intend to get the most from a macro lens and capture bags of fine detail. Accurate focusing is obviously key, although it will be difficult for the camera's autofocus system to find focus when working at distances of just a few centimetres. Even when it does lock on to the flower, it may choose the part that's nearest the camera. The trouble is that, when working at high magnification, every millimetre of missed focus counts. There are a number of techniques that can help to solve this problem, such as switching the

lens to manual focus and moving the flower towards or away from the lens.

Depth of field – how much of the image appears crisp from the foreground to the background – is another factor that makes a huge difference to the success of a flower photograph. The size of the aperture, the distance the lens is focused at and even the size of the sensor inside the camera have an influence on the depth of field, but aperture is usually the aspect that we have most control over in macro photography. To maximise depth of field you'll need to use a

"Focusing and depth of field are crucial to capture bags of fine detail"

narrowish aperture. We say 'ish' because ideally you shouldn't select the narrowest aperture available on your lens, otherwise the picture will actually have less bite – stay somewhere between f/11 and f/22. At narrow apertures, the shutter speed can become too slow for handheld photography, so use a tripod for sharp, shake-free results.

Incidentally, don't feel you need to routinely use narrow apertures when shooting flowers. Wider apertures such as f/2.8 and f/4 can produce softer, more atmospheric images, although you'll need to take extra care when focusing.

Even with the camera firmly fixed to a tripod, don't ignore the shutter speed, particularly if shooting outdoors. Tall-stemmed flowers and plants are particularly susceptible to the effects of the wind, and it only takes a breath of air for them to dance around. Playback the image and zoom in to check the details; if there are signs of motion blur you'll need to increase the shutter speed, and in order to do this you may have to sacrifice some depth of field by choosing a wider aperture. Alternatively, choose a ▶

Dealing with depth of field

The image you see through the viewfinder or on the Live View screen is displayed at the lens's widest aperture to ease focusing using the brightest image possible. This can be a problem when it comes to judging depth of field at different apertures. Handily, your EOS camera has a depth-of-field preview button near the lens mount (the 1200D lacks one, but you can assign this function to the SET button). Press this down as you adjust the aperture and you'll be able to see the depth of field change.

f/22 AT 1/25 SEC

f/2.8 AT 1/2000 SEC

Using a narrow aperture of f/22 means that the depth of field extends closer to the camera and beyond the point of focus. However, the narrow aperture will result in a slower shutter speed and the potential for blurred shots caused by camera shake, as illustrated.

A wider aperture of f/2.8 leads to a very shallow depth of field, enabling you to make a sharp flower stand out in a sea of blurred ones. However, you need to be spot-on when focusing with such a narrow band of sharpness or key details will be soft, as shown here.

STEP BY STEP

How to get the sharpest close-ups

In addition to locking the camera on a sturdy tripod, use these key camera settings for sharper shots
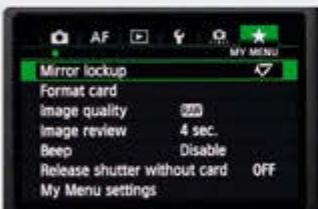
Optimise aperture
1 Your choice of aperture has an impact on the depth of field, and consequently how much of a flower or plant appears sharp. Using Av or M mode will enable you to set your preferred choice of aperture.

Use Mirror Lockup
2 Once activated, the mirror will be locked out of the way when you press the shutter button, enabling any vibrations to dissipate before you press the shutter again for a shot. We've added it as a MyMenu shortcut.

Try manual focus
3 Lenses can often 'hunt' for autofocus at close range. It's often easier to switch to manual focus instead. You won't find this option on the Quick Control Screen though – simply slide the switch on the lens to MF.

Use the Self-timer
4 There are two self-timer options: one that lasts ten seconds, and a shorter two-second one. The latter is perfect as you'll be able to fire the shutter without unintentionally knocking the camera.

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Focus stacking

Even the narrowest aperture available on a macro lens might not give you enough depth of field to get all the parts of a flower in focus. A technique that macro photographers use to get around this is 'focus stacking'. This involves taking a number of frames from the same position, but with the lens focused on a different part of the subject each time. These separate images can then be blended in Photoshop (using Edit > Auto-Align Layers followed by Edit > Auto-Blend Layers) or specialist focus stacking software to produce a picture in which more of the flower appears sharp than can be achieved in a single exposure.

STACK IMAGES SHOT AT f/4

Choosing and using lenses

Macro lens focal lengths range from around 50mm to 180mm. We'd recommend a lens in the 90-105mm range, though, as these enable you to get 1:1 magnification – so a subject will be recorded at life-size – but give you enough working room between the front of the lens and the subject so that you won't disturb it (in the case of bugs and insects) and you can light it effectively (in the case of flowers). Shorter focal lengths mean you have to be much closer to achieve life-size reproduction. Canon, Sigma and Tamron all offer macro lenses in this range with image stabilisation, although to be honest, this has limited use when you're shooting 1:1 with a tripod-mounted camera, and offers broadly similar levels of optical performance to non-IS variants.

Fine-tuning focus

Depth of field is so shallow when working at high magnification that even the subtlest focusing error can make the whole image appear soft. Your camera's AF points may not line up with the precise point you want to be in focus and, if there's not enough contrast in the parts of the flower, the autofocus system may struggle to lock on altogether, hunting back and forth. So, when it comes to focusing for close-ups, manual is the way to go.

You'll need to use a slightly different manual focusing technique for close-ups, because as you rotate the focusing ring on the lens you also alter the size of the flower slightly in the frame. The trick is to use the focusing ring on the lens to set the desired magnification, then to gently move the camera backwards and forwards to bring the focal point on the flower into sharp focus. Alternatively, in the case of potted plants, you can move the subject instead.

Focus point   *Focus point*   *Focus point*

Shooting close-up and your depth of field is measured in mere millimetres. Notice, too, how the magnification changes as the lens is focused on different parts of the flower

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FINAL FOCUS-STACKED IMAGE

When changing the focus while shooting the stack of images, make sure you leave some overlap between the sharp areas. Otherwise, you'll get blurred spots appearing in the middle of an area that should be sharp, as you can see here

Small details, big screen

It's best to switch to Live View; not only does it make it easier to compose the image, but it makes manual focusing a walk in the park. Position the white frame on the part of the flower you want to be sharp, tap the magnification button (once for 5x magnification, twice for 10x magnification) and gently rotate the focus ring on the lens until the details snap into focus.

Zoom in to 10x magnification in Live View for precision focusing

higher ISO setting – you should still be able to get excellent results at ISO1600. Also, try making the stem more stable by wiring it to a cane or fixing it in place with a metal coat hanger that's been straightened out and forced into the ground. A remote release will enable you to time shots between breezes.

Expose yourself

Flower photography can be a leisurely business, and there's usually plenty of time to get the exposure correct in camera, rather than tinkering with it later in software. Use the histogram to help with this; take a test shot, play back the image and press the INFO button until the brightness histogram appears on screen. You can also view a realtime histogram when shooting with Live View. Aim to 'expose to the right', so that the histogram is positioned towards the right of the graph without being 'clipped' at the edge.

To do this, you may need to use exposure compensation. For cameras with a rear Quick Control Dial, simply dab the shutter release to activate the metering and then rotate the dial left or right. If your camera doesn't have a rear dial, press the button marked 'Av+/-' and turn the Main dial. Take another test shot and review the results, making further adjustments if necessary. ∎

5 hints and tips for...

EF-S lenses

We highlight a Canon EOS camera or type of lens and provide priceless advice to get more from your gear

1 Smaller sensors
Canon's EF-S line of lenses are 'digital only', which means they aren't compatible with full-frame cameras. Indeed, attaching an EF-S lens to a full-frame camera may damage the mirror or lens.

2 1.6x multiplier
You still need to factor in the focal length multiplier of 1.6x when using an EF-S lens. A Canon 10-22mm EF-S lens on 700D has the same effective view as a 16-35mm lens on a full-frame camera.

3 It's not just Canon
Third-party manufacturers also produce lenses that are designed exclusively for the smaller sensors inside most Canon D-SLRs. Look for 'DC' lenses in Sigma's range, 'Di II' models from Tamron, and 'DX' from Tokina.

4 EF vs EF-S
EF-S lenses are smaller and lighter than their full-frame EF equivalent, but consider whether you'll upgrade to a full-frame camera in the future before committing. If you think you will go full-frame, stick with EF lenses.

5 Sharp shooting
Many EF-S lenses have fairly slow maximum apertures and, as a result, may be more susceptible to camera shake. However, their light weight combined with stabilisation built into many makes them easy to hold steady.

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PROBLEM #12

How do I make my camera focus faster?

Get a sharper performance – and sharper results – from your EOS D-SLR's autofocus system

From the eye-controlled focusing of the EOS 3 film SLR to the 70D's Dual Pixel CMOS AF that brings accelerated autofocus to Live View and movie shooting, Canon has always been at the forefront of focusing innovation. EOS D-SLRs are renowned for their fast and accurate autofocus when twinned with Canon EF lenses – there's a reason that cream-coloured EF super-telephotos dominate the touchlines of sporting events after all.

However, focusing isn't a press-and-forget-it feature. Nothing is more frustrating than lining up a shot and tapping the shutter only to watch the image in the viewfinder drifting slowly in and out of focus as the camera struggles to find something to lock on to – known as 'hunting' in photography circles. Missing an action shot because the AF system couldn't keep up with the subject's movement is equally exasperating, as is having to wait for Live View to catch up and for the subject to snap into view.

Thankfully, there are some tricks and techniques to enable you to sharpen up the performance of your camera's autofocus system. These range from selecting the optimum AF points in the viewfinder to

adjusting the sensitivity of the AF system's tracking via an option buried in the camera's menu. However, it's important to bear in mind that there are two factors that will cause autofocus to stall though, no matter how much menu tinkering you do: the amount of light available and the maximum

aperture offered by the lens. Low light can be an autofocus killer, with even professional-grade D-SLRs, like the 5D Mark III and 1D X, hesitating in very dark conditions. This is where using a lens with a wide maximum aperture, such as f/2.8, really pays off; it will allow more light to enter the camera than a lens with a maximum aperture of, say, f/4 or f/5.6. The more light that strikes the AF sensor, the faster and more accurately the AF system will be able to focus the lens.

Despite delivering a potential boost to autofocus speed, it can be harder to achieve accurate focus with lenses that have

In Live View, you're not restricted to preset AF points. You can autofocus in any area of the screen as well as set different AF methods

> ## "Some lenses have what's known as a long 'focus throw' although you won't find this in their specs sheets"

maximum apertures as wide as f/1.4 and f/1.2. This is because they have a very shallow depth of field at their widest aperture, and consequently less of what's being photographed appears sharp. As a result, it can take longer to position the focus sweet spot precisely.

The long and short of it

Some lenses also have what's known as a long 'focus throw', although you won't find this mentioned in their specs sheets. The focus throw refers to how far you have to rotate the focus ring in order to move the focal plane – the sharp bit – through the image. A turn of 90 degrees might be enough to refocus a lens with a short throw from close up to infinity, whereas you may need to rotate the focus ring a full 360 degrees to achieve the same effect on a lens with a long throw. As a result, the latter are much slower to autofocus and are more suited to those situations requiring manual focus, such as when shooting close-ups or video.

Whatever lens is attached to your camera, you can cut down the time it takes the AF system to lock onto a moving subject by using the pre-focusing technique. Simply point the camera at something roughly at the distance that you anticipate the subject to be, then half-press the shutter release to focus the lens. The camera will now only need to refocus the lens a short distance when the subject appears. Sports photographers often use this trick for fast, predictable ▶

Setting up autofocus

Make these adjustments to boost the performance of your camera's AF system

AF mode

EOS cameras have three focusing options, which you can switch between by pressing the AF button and rotating the command dial, or via the Quick Control Screen. The default AI Focus mode automatically switches from One Shot AF to AI Servo when it detects a moving subject, but we'd recommend manually choosing one of these two modes for faster, more predictable results.

AF points

In the viewfinder you'll see an array of AF points that glow red when they're active. Out of the box, your camera will have them all enabled, and it's left to the AF system to determine which of these points it will use to focus with. However, you can manually select a single AF point for more precise results.

AI Servo options

Using the Shooting menu, Custom Functions and, in some cases, dedicated AF menu, you can tailor the performance of a Canon D-SLR's continuous focusing. For instance, you can increase the speed at which the system reacts to a moving subject or slow it down to avoid sudden refocusing.

Back button focus

Moving autofocus from the shutter release to the AF-ON button enables you to quickly activate or deactivate the system. This is useful in sports and wildlife photography, allowing you to track the subject using AI Servo AF, but stop focusing if the subject becomes temporarily obscured.

STEP BY STEP

How to pre-focus your Canon-fit lenses

Improve your hit rate when photographing action by setting the focus distance and switching the lens to manual
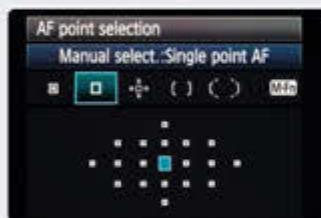
Activate AF points

1 For accurate results, you'll need to manually select an AF point. Press the AF point selection button on the back of the camera. 'SEL [ ]' appears in the viewfinder and the top LCD screen, if your camera has one.

Select the centre one

2 The centre AF point is the most precise, so choose this. When using cameras with multiple AF point patterns, press the Multi-Function ('M-Fn') button next to the shutter release to cycle through the options.

Focus the lens

3 Point the camera at an area that you anticipate the subject will pass across and half-press the shutter to activate the autofocus – you need to be in One Shot AF mode so that the camera will lock the focus.

Lock the setting

4 Once the autofocus is locked, switch the lens to manual focus, enabling you to track a moving subject as it approaches the pre-focused point and take a burst of sharp shots as it passes across it.

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AI Servo mode

AI Servo mode is dedicated to moving subjects, with the camera continuously adjusting the focus to keep the subject sharp. As a result, this is the mode where any lag in autofocus speed is very noticeable. If the camera and lens can't keep up, then anything from one frame to an entire sequence will be blurred. You get what you pay for when it comes to the autofocusing speed of EOS bodies and lenses, with pro-grade kit offering a punchier performance than beginner cameras and glass. However, there are several menu tweaks that you can make to give a sharper response.

Focus priority

Cameras from the 70D and up feature a comprehensive range of autofocus Custom Functions. One of these enables you to change the priority of the first shot and then subsequent ones in a sequence taken using AI Servo. You can choose to allow a picture to be taken even when it's not in focus, or only once the subject is sharp.

Faster Live View focus

Compared to shooting with the viewfinder, using autofocus with Live View can be like wading through treacle. However, there are ways of making it work faster. For a start, there are several different Live View focus modes to choose from. These are accessed through the red shooting menu or by pressing the 'AF' button while the camera's in Live View mode.

The options available vary from camera to camera – the 1200D offers two AF modes, for instance, while the 70D offers four – but all share the comparatively snappy Quick AF mode. This option relies on the camera's AF sensor to focus, rather than the slower method of detecting sharpness on the sensor itself. In practice it's a little clunky to use though, as once you press the shutter release the screen turns black as the mirror flips down to expose the AF sensor to light before flipping back up again.

An alternative approach is to use one of the other autofocus modes, but manually focus the lens roughly at the subject's distance before activating the autofocus to touch things up.
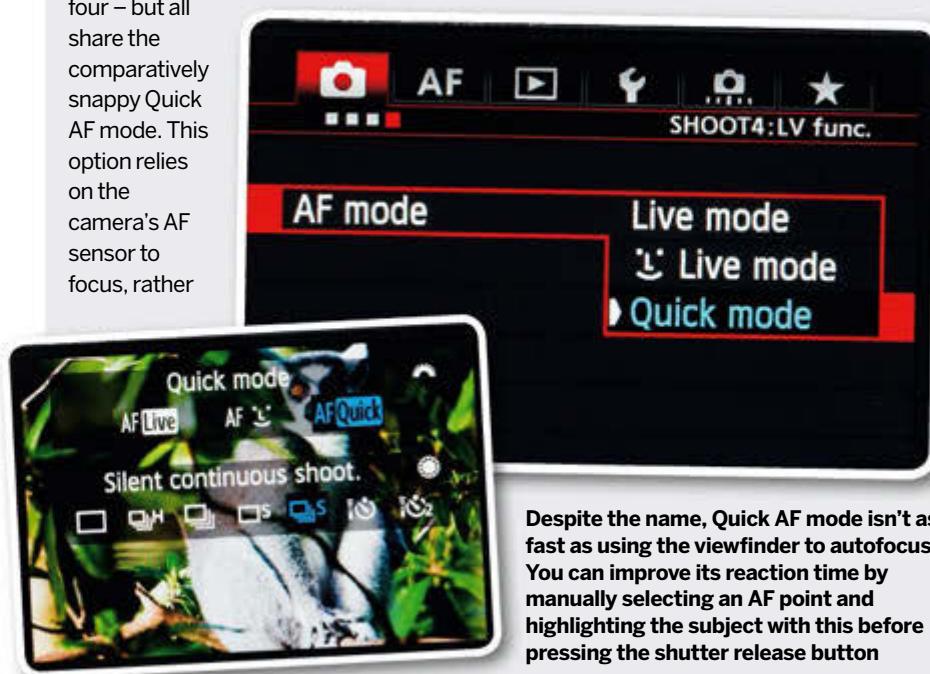
Despite the name, Quick AF mode isn't as fast as using the viewfinder to autofocus. You can improve its reaction time by manually selecting an AF point and highlighting the subject with this before pressing the shutter release button

Make a point

Letting the camera determine where to focus can lead to disappointing results. With all the AF points active, the camera may focus on a part of the scene you weren't expecting, or fail to get anything sharp as it hunts for the subject. You'll often get faster results if you manually choose a single AF point and use that to highlight the area you want to be sharp. Advanced D-SLRs, like the 7D and 5D Mark III, enable you to use neighbouring AF points and small clusters of them, allowing you to keep the autofocus concentrated within a specific area.

The 5D Mark III offers a wide array of AF point arrangements to choose from

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C.Fn II : Autofocus   1
Tracking sensitivity

+2

Locked on   Responsive
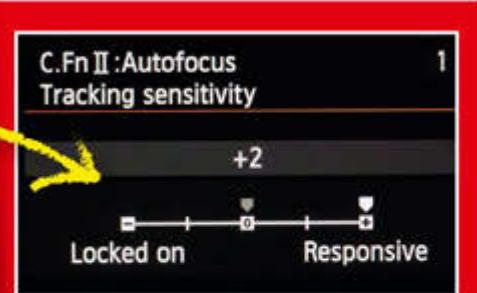
Tracking sensitivity

This Custom Function enables you to weight the AI Servo tracking speed. With the setting shifted towards Locked On, the camera will be less inclined to refocus if the subject becomes briefly obscured. Push the setting closer to Responsive and the AF system becomes more twitchy, rapidly adjusting the focus distance.

Ban hunting!

There are a number of reasons why the autofocus can fail to 'bite', including a lack of contrast, low light levels and a subject that's small in the frame. Rather than keeping your finger pressed on the shutter release and watching the image looping in and out of focus, lift your finger and half-press it again, making sure that the subject is covered by one of the AF points – this 'reset' is usually faster than waiting for the camera to try and find focus.

C.Fn II : Autofocus   6
Lens drive when AF impossible
0:Continue focus search
1:Stop focus search

INFO Help
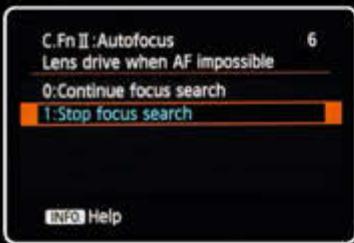
Advanced D-SLRs enable you to stop hunting after one attempt

subjects, such as motorbikes performing laps of a circuit. By pre-focusing at a specific point on the track, then switching the lens to manual focus to lock this setting in, a series of pictures can be taken as the subject passes across the pre-focused point.

Some lenses, notably Canon's telephotos and longer macros, come with a focus limiter switch, restricting the distance over which the lens needs to autofocus. You can choose between a setting for close range, or one that covers a moderate distance to infinity, based on the position of the subject.

The number of AF points, and the way in which they're selected, is another key factor

that affects the time it takes the camera to lock onto a subject and track its movement using AI Servo AF. Activating all the AF points and leaving it to the camera to determine where to focus rarely leads to the fastest and most accurate performance. The system can make light work of a single subject against a clean background – such as bird in a blue sky – but a more detailed background can send the AF system into spasms. By manually selecting a single AF point, or smaller group of them, and positioning this on the subject, autofocus response time will be improved and there will be less room for focusing errors. ■

5 hints and tips for...

Canon 100D

We highlight a Canon EOS camera or type of lens and provide priceless advice to get more from your gear

1 Quick Control
The compact 100D has fewer buttons than larger EOS bodies, so you'll frequently use the Quick Control Screen to change settings. As a result, it's worth having a spare battery for longer trips.

M   1/500   F5.6   400
-3..2..1..0..1..2..3
ONE SHOT
Canon

2 Shoot in the dark
Not only does the 100D pack a Night Portrait mode, but it features a useful Handheld Night Scene mode for tripod-free sharp-shooting in the dark. You'll find these options under the 'SCN' setting.

3 High-speed drive
The 100D can capture seven Raw files at 4fps, but if you're shooting fast action sequences you may find the camera slowing down while it saves the files. In this instance, it may be better to switch to JPEGs.

125   1.2.1.0.1.2

4 Video focusing
You can achieve a pro-look 'pull focus' effect when shooting movies by tapping on an object close to the camera then tapping a more distant one to refocus. The process is quiet and smooth with an STM lens.

5 Creative filters
As well as treating images with Creative Auto mode and Extra Effect Shot, you can apply the classic Miniature Effect to video. In addition, you can recreate the effect of timelapse photography by altering the shooting speed.

How do I prepare for travel photography?

From the gear you really need to how to shoot from a plane, here's our ultimate Canon D-SLR holiday guide...

Activate the Live View grid display and electronic level to help prevent wonky horizons when shooting video or stills

Whether it's a wet weekend in Bournemouth or a fortnight under canvas in Kenya, taking a trip somewhere new will do good things for your photography. You'll get to spend some quality time with your camera, you'll feel motivated to take plenty of pictures, and you'll be able to capture some memorable family moments.

Travel photography often involves a bit of everything, from landscapes and nature to family portraits and night photography, and that has implications for the gear you take. If you're flying, the determining factor in what you'll take and what you'll leave behind is your carry-on luggage limit. Never put a camera, lenses or flashgun in your checked baggage unless you're confident it won't arrive at the other end in pieces – if it arrives at all. Keep your expensive and fragile kit with you as hand luggage, leaving your tripod to run the hold baggage gauntlet alone. When it comes to carry-on weight and size allowances, long-haul flights are the most generous. Budget airlines are usually very tight, and it's worth checking your carrier's restrictions on its website.

While certain holidays demand specific gear, such as a telephoto lens for a safari,

the core kit for most trips will be a single camera body and a standard zoom. A lens in the 24-70mm range is a great all-rounder for a full-frame camera, wide enough to tackle sweeping landscapes and city views but with moderate telephoto reach for head-and-shoulders portraits. Canon's 24-70mm

f/4 IS and 24-105mm f/4 IS lenses are solid examples of all-purpose travel options. On APS-C cameras, your 18-55mm kit lens or similar gives a similarly versatile range.

Extend your range

If space and budget permit, then consider adding an ultra-wide lens (something equivalent to a focal length of 17-40mm is ideal) and a telephoto zoom (such as the classic 70-200mm) to your kit. With these three lenses you'll be able to cover the vast majority of shooting opportunities. If you want to shave more weight, then taking just

"Keep your camera with you as hand luggage, leaving your tripod to run the hold baggage gauntlet alone"

a single superzoom might prove a better option. The large range of focal lengths that these lenses cover, typically 18-200mm, is certainly tempting, although they are compromised, both optically and in terms of maximum aperture. You may have to increase the ISO to get a fast enough shutter speed for handheld photography, and that can degrade the quality of your pictures.

Essential accessories

In terms of accessories, again, keep things light. Lens hoods, plenty of memory cards and a spare battery should top your list, followed by a lens and sensor cleaning kit, a flashgun and a couple of filters. We'd recommend a UV filter if you're shooting at the coast in order to protect a lens's front element from salt spray. If you've yet to invest in a circular polarising filter, a holiday provides the perfect excuse to do so, enabling you to capture picture postcard blue seas and skies. Circular polarisers are available for both screw-in and square filter systems, and cost anywhere between £30 to £215. If you choose the screw-in type, buy one that fits the lens with the largest filter thread in your collection, and use step-up rings to attach it to your other lenses. If you're using a square filter system then you'll just need an adaptor to make the circular polariser fit the mount.

When it comes to camera settings for travel photography, we'd suggest settling on a set-up that you can use in 'grab shot' ▶

Memory matters

Aside from ensuring you have a regular source of power to recharge your camera battery, and that your gear is insured, the biggest pre-flight worry is invariably memory card related. How much storage do you really need? And the answer's always the same: double what you think, particularly if you'll be recording video. You can take a laptop with you, and religiously transfer shots from your memory card every evening, but that's the last thing you'll want to do if you're trying to cut down on weight. Don't rely on using just one large-capacity card – if it corrupts, you could lose all your shots. Take a few 8Gb or 16Gb cards with you instead.

Saving space

We've all been there: running out of space on our last memory card with no way to back up the images. Here are some options that can help you squeeze more shots on there:

Shoot JPEGs You can get around four times as many JPEGs on a memory card as you can Raw files. Or some EOS D-SLRs can shoot smaller M-Raw or S-Raw files.

Shoot in Single drive mode It's easy to end up with unwanted duplicates when you're shooting in Continuous mode.

Erase unwanted images You'll have to be ruthless. Delete shots as you go, or use your D-SLR's Rating or Protect Image options to highlight the keepers, then choose Erase images in the Playback menu to remove the rest. Don't format the card though, as you'll lose the protected images as well.

STEP BY STEP

How to set up your LCD when it's sunny

It can be hard to see detail on the rear screen in sunny conditions. Here's how to improve the view...

Brightness

1 A factory-fresh camera is set to an average level of brightness. Some EOS D-SLRs will automatically adjust this according to the conditions, but we'd suggest setting brightness to max in the menu when sunny.

Highlight alert

2 In blazing sun, it can still be hard to see the important histogram detail when you're reviewing shots. To make it easier to spot potential exposure errors, open the blue playback menu and enable Highlight alert.

Check and adjust

3 Clipped highlights will now be indicated by flashes of black during playback – this is easier to see if you use the full-screen view. If key detail is clipped, use negative exposure compensation and reshoot.

Battery life

4 Increasing the LCD brightness uses up more battery juice, so take steps to reduce power consumption in other areas. For instance, choose a low setting for the Auto Power Off feature.

Canon Workshop

Controlling contrast

On family holidays in the sun, taming deep shadows and bright highlights in blazing sunshine is a challenge, and there are a few things you can do to capture better exposures. First, shoot Raw so that you can pull more detail out of the shadows and highlights in post-processing. If you shoot JPEGs, make sure the Auto Lighting Optimizer is activated, as this automatically adjusts the brightness and contrast. Where possible, use the Auto Exposure Bracketing option to take three versions of a shot at different exposures – you can then choose the best one later, or combine two or three images in Photoshop. If your camera has an HDR mode experiment with this, although be prepared for flat-looking images. Finally, use a blip of flash to open up shadow detail in portraits.

AUTO LIGHTING OPTIMIZER: DISABLED

AUTO LIGHTING OPTIMIZER: HIGH

Brightens up shadows without looking too artificial
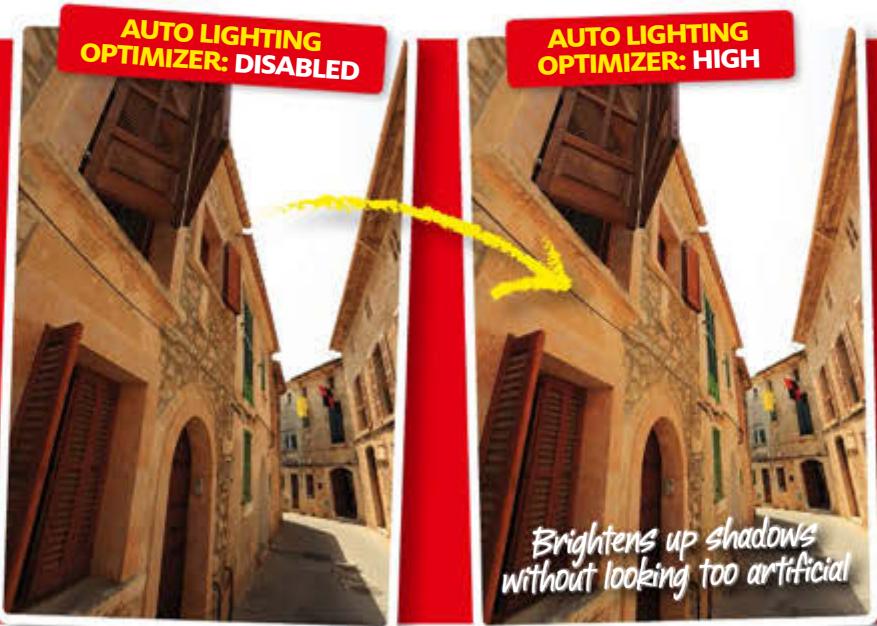
Top travel kit: circular polariser

Circular polarising filters reduce glare and cut through reflections, revealing detail under the surface of water and removing distracting shine from glass and foliage. They also boost colour and contrast, making them a good choice when you're photographing landscapes or architecture, or when shooting at the beach, where they will darken blue skies and saturate the sea. Polarisers are made from two pieces of glass, and you rotate the front element to increase or reduce the strength of the polarisation. The effect is most pronounced at 90 degrees to the sun, although you may find the sky becoming too dark when the filter is used at its strongest setting – look at the scene through the viewfinder or on the Live View screen, and slowly turn the filter until you get the desired effect.

WITHOUT POLARISER

Uninspiring, flat-looking colours

WITH POLARISER

Richer colours and a punchier result

Avoid using a polariser when shooting skies with very wide lenses, as the effect will be uneven. Rotate the filter to reduce the strength or remove it altogether

Custom shooting

Custom shooting, available on EOS D-SLRs from the 60D upwards, enables you to save your own bespoke camera setup to the mode dial. The 6D, 7D and 5D Mk III have more than one 'C' mode, enabling you to save setups for the different shooting situations you're likely to encounter – street portraits, indoor scenes or landscapes for example – and instantly switch between them.

Register settings
Select the Custom shooting mode to register settings to
Custom shooting mode: C1
Custom shooting mode: C2
Custom shooting mode: C3
MENU
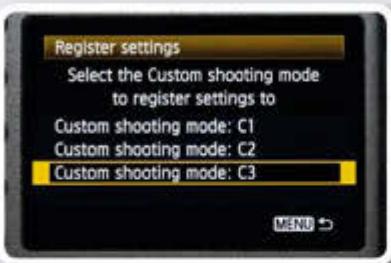
Select Custom shooting mode (5D Mk III and 6D), or Camera User Setting (60D, 70D and 7D) to save the settings

Select the mode number – C1, C2 or C3 – on the mode dial if applicable

HDR SHOOTING

Avoid using this with moving subjects

FLASH

Use fill flash when the sun is strong and overhead

Aerial photography

Whether you're shooting from an easyJet window en route to your destination, or lucky enough to see the local sights from a helicopter, there are a few techniques that will improve your aerial shots. First, use a fast shutter speed to keep things sharp – in the region of 1/2000 sec for a chopper, and at least 1/500 sec for a plane. Shoot in Av mode, and select the narrowest available aperture to get everything in focus; if this doesn't give you a fast-enough shutter speed, up the ISO. Manually focus at infinity, and don't lean against the fuselage or window, as this will transmit more vibrations than simply handholding; if you're in a helicopter, lean out of your seat too.

Use a stabilised lens to improve your chances of sharp results

mode and from which you can make exposure adjustments almost instinctively as required. While most Canon D-SLRs have a snapshot option built in – the green Scene Intelligent Auto option on the mode dial – we'd avoid this, as it offers limited or zero control over shooting settings. The flash may fire when you weren't expecting it (and where flash isn't allowed – in museums, for example), and the combination of aperture, shutter speed and ISO can leave your holiday shots looking like smartphone snaps. Program mode is a step up. It also sets the aperture and shutter speed automatically, but you can choose a different combination of the two by rotating the control wheel.

Learning which direction to spin the wheel for a faster/slower shutter speed or wider/narrower aperture can take time though, and Program mode can be a bit fiddly with flash.

Av all-rounder

Aperture Priority (Av) mode often makes for a better default mode. You have more control over the depth of field, and when Av mode is used in combination with Auto ISO you can be confident the camera will automatically set a shutter speed that's fast enough to deliver sharp handheld pictures. Advanced EOS cameras such as the 5D Mk III and 70D enable you to set a minimum shutter speed when you're using Auto ISO. ■

5 hints and tips for the...

Canon 1200D

We highlight a Canon EOS camera or type of lens and provide priceless advice to get more from your gear

1 Finer metering
The 1200D doesn't offer spot metering, so if you want to base your exposure on a small area of the picture use partial metering, which covers approximately 10 per cent of the image at the centre of the viewfinder.

2 Movie hiccups
When playing back a movie you may notice it pausing. This is likely to be because the autoexposure system was adjusting to a big jump in brightness. To avoid this, select Manual exposure in the movie menu.

3 Exposure compensation
The 1200D enables you to set exposure compensation of up to +/- 5 stops, but the viewfinder scale only runs to +/- 2 stops. If you need more compensation, use the Quick Control screen.

4 DoF preview
Many D-SLRs have a depth of field preview button to enable you to see how much of a scene will appear in focus. The 1200D doesn't, but you can assign this function to the SET button via Custom Function IV: 9.

5 No card, no shot
By default, you can press the shutter release without having a memory card in the camera. To ensure that you can't do this, set the 'Release shutter without card' option in the first red shooting menu to Disable.

Canon Workshop

PROBLEM #14

What is dynamic range?

Capture more detail throughout your pictures by learning how to control the dynamic range of the scene

To make the right choices when it comes to exposure, you'll need to wrap your head around the concept of dynamic range. Essentially, this is the range of brightness levels in the scene you're photographing, from the darkest areas to the lightest areas. The reason you need an understanding of dynamic range is that dark areas and light areas require different levels of exposure in order to record detail in them. However, your camera can only be set to record one exposure value – a single combination of aperture, shutter speed and ISO – when you take a picture.

Thankfully, modern camera sensors can retain detail in areas that are darker or lighter than the exposure value used to make the photograph. For example, the dynamic range of JPEGs produced by the EOS 5D Mark III is approximately 10EV (Exposure Values or 'stops') at ISO100. So, as long as the exposure difference between the darkest areas and the lightest areas of a scene you're photographing isn't greater than 10EV, the camera will be able to record detail across the entire dynamic range.

You can measure the dynamic range of a scene by switching the camera to its Spot or Partial metering pattern, pointing the centre AF point at a dark area followed by a light area and checking the readout at the bottom of the viewfinder as you do so. The difference in exposure level between the two will give you a good indication of the dynamic range. For instance, if you get a reading of 1/10 sec at f/5.6 for the dark area and 1/320 sec at f/5.6 for the light area, this is a dynamic range of five stops (1/10 sec – 1/20 sec – 1/40 sec – 1/80 sec – 1/160 sec – 1/320 sec).

Read the histogram

Your camera offers a more intuitive way to gauge dynamic range, in the shape (literally) of the histogram. This shows you the range of brightness levels in a scene and how these relate to the dynamic range of the sensor. You can view the brightness histogram with a photo you've taken by pressing the Info button during playback. The shape of the histogram is determined by the brightness of the scene and a number of camera settings. Changing the white balance or picture style setting also changes the shape of the histogram. Exposure compensation has no effect on dynamic range though; it just makes the entire picture brighter or darker, rather than compressing or stretching it. Negative exposure compensation shifts it left, towards the dark side of the graph, while positive exposure compensation moves it right, towards the light side of the graph.

The histogram also enables you to see when the dynamic range of the scene or subject might exceed the dynamic range of the camera. If the histogram goes beyond the left (dark) or right (light) side of the graph – or both at the same time – then detail in these areas of the picture will be 'clipped' and be either pure black or pure

To reveal the histogram in Live View mode, make sure 'Exposure Simulation' is activated in the red shooting menu

Easy guide to dynamic range

The brightness histogram that you can view on the rear LCD, either alongside a picture you've taken or while you're shooting in Live View mode, gives you a snapshot of the brightness level of the scene. Here's what it's telling you...

1 Dynamic range of the scene
The white histogram represents the range of brightness levels across the scene, from the shadows on the left to the highlights on the right. Its shape and size will change, depending on the camera's exposure settings.

2 Dynamic range of the camera
The graph's width illustrates the dynamic range of the imaging sensor. Canon handily splits this into five segments, making it easier to see where the histogram falls when you're having to squint at the LCD in bright light.
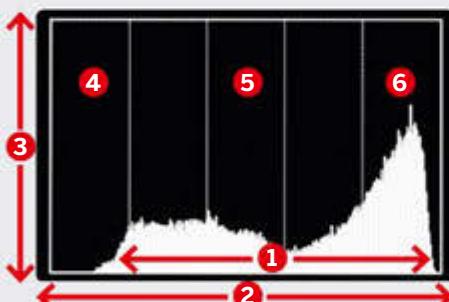
3 Pixels
The height of the histogram shows you how many pixels have registered each brightness level.
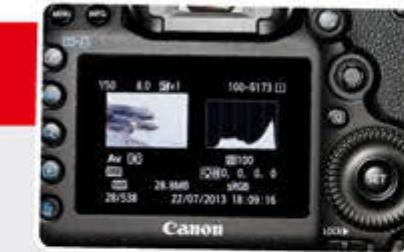
4 Shadows
The left of the graph represents the dark areas. If the histogram is bunched towards this side then the picture may be underexposed.

5 Midtones
The middle of the graph, unsurprisingly, shows the middle of the brightness range.

6 Highlights
The right side shows the bright areas. If the histogram is pressed up against the edge of the graph the picture may be overexposed.

white. This is fine if you're trying a creative effect, but usually you'll want to retain some detail across the dynamic range, especially in the highlights. Black shadows look natural, but ice-white highlights don't.

The good news is that there are a number of techniques to help you control dynamic range. The easiest is to change the Picture Quality setting to Raw rather than JPEG. Raw files hold more information than JPEGs and they can cope with a wider dynamic range. If the highlights or shadows

are only minimally clipped on the histogram, then it's likely that the file will still hold detail in these areas. Raw files are more tolerant to brightness and contrast adjustments when you process them, so you can open up shadows and tone down highlights without having as much impact on image quality.

Canon includes a range of in-camera processing options that can extend the dynamic range further. Auto Lighting Optimizer (ALO) brightens up shadows in an image and is particularly effective when ▶

> **"Your EOS offers a more intuitive way to gauge dynamic range, in the shape (literally) of the histogram"**

STEP BY STEP
How to set Auto Lighting Optimizer (ALO)
The ALO function automatically adjusts brightness and contrast to record more detail than in a standard exposure

Adjust the strength
1 In a factory-fresh EOS camera, ALO is applied at a standard strength. To increase or decrease the effect, or disable it entirely, go to the red shooting menu or press the Q button to open the Quick Control Screen.

Preview in Live View
2 As with white balance and picture style, you can preview the ALO effect in Live View mode. Press the Q button when in Av, Tv, P or M mode, and then use the rear dial or arrow keys to change the setting.

Shoot Raw
3 ALO is applied to the image before saving it. Shoot JPEGs and the effect is locked in, but shoot in Raw and you can adjust it later when you process the file, either in-camera or in Digital Photo Professional.

Switch it off
4 As it brightens dark areas, ALO can increase noise, so you may want to disable it. It's also worth switching it off if using exposure compensation to make a picture darker, otherwise the image may still be too bright.

Canon Workshop

Using filters

Landscapes are typically high-contrast scenes with a wide dynamic range. The difference in brightness between the sky and foreground can be too much for the camera's sensor to cope with. That's why landscape photographers usually carry a collection of graduated neutral density filters with them. These filters are dark at the top and clear at the bottom and are available in both hard and soft transitions in a range of strengths. By positioning the dark part over the sky its exposure value is brought closer to that of the landscape, enabling detail to be recorded in both.

There's less of a need for ND grads in digital photography as it's often just as easy to take two photos, one exposed for the sky and one exposed for the land, then blend these together.

EXPOSURE FOR THE SKY

1/60 sec at f/16; ISO100

EXPOSURE FOR THE LAND

1/15 sec at f/16; ISO100

High vs low

As explained on the previous page, histograms all look different. There isn't a 'perfect' shape, although one which avoids clipped highlights and shadow detail is something to aim for. You'll need to use different strategies when faced with scenes that have a high dynamic range and those that have a low dynamic range

HIGH DYNAMIC RANGE

LOW DYNAMIC RANGE

Here, the contrast between shadows and highlights is so extreme, both are clipped. Using negative exposure compensation to make the picture darker would save the highlights, but make the rest of the scene very dark. One option is to shoot in Raw and use the shadow and highlight recovery tools in Lightroom or ACR to claw back detail. Another option is to use your camera's exposure bracketing feature to automatically take a series of photos at different exposures, then blend them into one image later.

Some scenes won't show a histogram that stretches the entire width of the graph. This means the dark and light areas are much closer in terms of their level of brightness, as here. In these cases, it's best to 'expose to the right'. This simply means adjusting the exposure so that the histogram moves closer to the right of the graph, as this is where the sensor captures more tonal detail. It's worth activating Highlight Alert in the blue playback menu when using this technique, to help you avoid clipping the highlights.

Clipped shadows = lost detail   Clipped highlights = lost detail

Use exposure compensation to move the histogram to the right
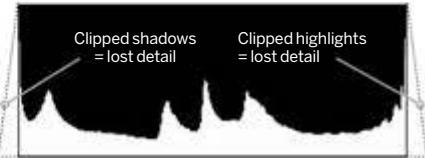
HDR mode

Some EOS cameras feature a dedicated High Dynamic Range (HDR) mode, where the camera takes three pictures at different exposures then blends the results to offer a wider tonal range. Other cameras have an 'HDR Backlight Control' scene mode which does a similar thing but doesn't offer the same level of control and flexibility. If you're shooting with a tripod, switch off the 'Auto Image Align' option, otherwise the image will be cropped.

Normal JPEG: Blocked up shadows and burnt out highlights

HDR JPEG: A more detailed, but lower contrast image

ADD AN ND GRAD FILTER

IMPROVED EXPOSURE

A two-stop ND grad (0.6ND) was used (as 1/15 sec to 1/30 sec to 1/60 sec = two stops)

Using flash to brighten a subject

When you're taking a picture of a subject that's lit from behind, the contrast between the dark subject and the bright background may be too high for the camera. One option is to shoot a silhouette, where you expose for the bright background – that is, you underexpose the scene to make sure that the histogram isn't being clipped on the right – and allow the subject to become completely black. Alternatively, and if you're close enough, expose for the highlights but use a burst of flash to brighten up the subject. This will bring the dynamic range of the scene within the tolerance of the sensor and is a particularly effective technique for portraits shot at sunset or sunrise, when the contrast will be very high.

shooting high-contrast scenes, such as architecture on a clear, sunny day. Highlight Tone Priority is another automatic exposure adjustment, but this brings more definition to highlight areas. Unlike ALO, this is switched off by default and it also affects Raw files, as the minimum ISO available when it's active is set to ISO200. Both functions can't be activated at the same time.

HDR mode is found on more advanced Canon bodies, and automatically records a photo at three different exposures, then combines the best bits of each. Even if you shoot Raw, the final image will be saved as a JPEG on the memory card.

The 5D Mark III has the best version of this mode, as it also enables you to save the original Raw files too – if you don't like the result the camera came up with you can try blending the exposures later yourself in Photoshop or similar software.

Finally, there are some old-school tricks that can be relied on when the in-camera tech isn't enough. Graduated neutral density filters reduce the contrast between a bright sky and dark landscape, while polarising filters rein in glare and reflections. A flashgun or reflector can fill in shadows to create a more balanced image too, and are especially good for close-ups and portraits. ■

5 hints and tips for the...

Canon 700D

We highlight a Canon EOS camera or type of lens and provide priceless advice to get more from your gear

1 Silent movies
Movie Servo autofocus enables the camera to continuously focus while shooting a movie. However, we'd recommend an external microphone as the internal one may pick up the sound of the autofocus motor.

2 Fast cards
When shooting movies, use a card with a fast read/write speed, otherwise the movie may not record correctly. It's worth investing in a large capacity card too, as movie files are *much* larger than image files.

3 Display playback
If you've recorded videos and photos but just want to view one or the other, head to the second blue playback menu, select 'Image jump' and press Set. You can now display just movies or stills when you swipe the screen.

4 Magnified image
It's worth magnifying details in an image you've captured in order to check they're sharp, but you can't do this immediately after the image has been shot – you need to press the playback button first.

5 Picture style
If you intend to edit your movies and add effects to them, set the picture style to Neutral. This produces a 'flatter' result that gives you more headroom when it comes to processing and 'colour grading' the footage.

Canon Workshop

PROBLEM #15

How can I get more from white balance?

Get clean whites and cast-free colours by getting to grips with white balance...

I f the colours in a picture you've taken don't look right, the chances are that it's down to the camera's white balance setting. There might be an overall blue tint or the image may look too yellow. Under certain artificial lighting conditions, a picture can be tinged with sickly green or magenta.

It's the colour temperature of the light that causes these types of colour cast. That's why you often hear photographers referring to the light as being either cool (blue in tone) or warm (yellow, orange or red). Colour temperature is measured in degrees Kelvin, with daylight at midday having a temperature of around 5200-5500K. A tungsten bulb has a warmer temperature (around 3200K), while a blue sky has a cooler temperature of 10000K.

Our eyes (or rather our brain) adjusts to changes in colour temperature. While we can see that a candle gives off a warm glow and there's a distinctly cool look to shadows on a sunny day, we know that a white subject illuminated by each type of light is still white. Your camera doesn't though, and that's why you can end up with a colour cast across the image. This is where an understanding of the camera's white balance control pays off.

White balance enables you to neutralise the colour casts caused by different types of lighting. It does this by changing the colour mix of the image to match the colour temperature of the light. You can either leave the camera to do this automatically or manually select one of the camera's preset colour temperatures, each of which

BEFORE

AFTER

Here, a long exposure created with a strong ten-stop ND filter has given the image a strong blue cast; choosing a 'warming' white balance preset removes the cool tone

corresponds to a common light source. You can also go one step further and create your own custom white balance setting by shooting a white or grey object in the same light as the subject of your photo.

It'll be all white

When you record JPEGs or movies, it's important to set the appropriate white balance for the scene because the colour temperature set at the time of shooting is 'baked into' the file. What you see is what you get with a JPEG; if the image on the back of the camera looks too 'cold', that's what it'll be like when you open it on a computer.

However, you can avoid this problem by changing the Picture Quality setting from JPEG to Raw. Raw files contain unprocessed information from the camera sensor, and

one of the advantages they offer is that you can change the white balance after taking the shot. Because they're unprocessed files, it does mean you have to convert them into a JPEG or TIFF format yourself, either in-camera or in special software like Canon Digital Photo Professional. But this allows you to save multiple versions of an image without making any permanent changes to the original file, leaving you free to fine-tune the white balance for perfect colours.

So, if you can fix the colour temperature after you've taken a shot in Raw, surely you can leave the camera set to Auto White Balance? After all, Auto does a good job, particularly in mixed lighting, and it's one less thing to think about. The thing is, using one of the presets or dialling in the Kelvin value gives consistency; if all the images in a

Canon's colour temperature settings

Preset	Approx colour temperature
Shade	7000K
Cloudy	6000K
Daylight	5200K
Flash	4500K
Fluorescent	4200K
Tungsten	3200K

Some EOS D-SLRs let you manually set the colour temperature from 2500K to 10000K in 100K increments.

How to control white balance

Your camera's White Balance menu can be accessed in three different ways: by selecting it in the red shooting menu, by pressing the Q button and changing the setting on the Quick Control Screen, or by pressing the WB button. Options are an Auto setting, a range of preset colour temperatures (named according to the lighting conditions they suit), a Custom white balance setting and a Kelvin option (although this is only available on more advanced EOS D-SLRs). Here's what each option does:

Kelvin
Colour temperature is measured in degrees Kelvin. Choose the 'K' setting in the white balance menu of more advanced EOS cameras and you'll be able to enter a colour temperature from 2500K to 10000K.
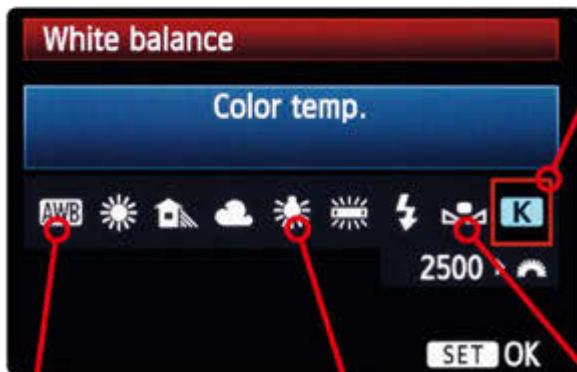
Auto
The camera makes a best-guess at the colour temperature you're shooting in. It makes a fair fist of it in daylight and in mixed lighting, but it can leave pictures looking cool in weak sunlight and it leeches the colour out of a spectacular sunset.

Presets
Canon knows the Auto setting isn't foolproof, so it also offers a set of colour temperature presets tuned to specific light sources. Manually select one of these to match the camera's white balance to the type of light you're shooting in.

Custom
When precision matters, you can take a manual colour temperature reading and register this as a custom white balance setting. All you need is a white or neutral grey object you can shoot in the same light as your subject (see below).

sequence share the same setting, batch processing the files is much simpler. It can take longer to work shots up if Auto White Balance has been used, as there may be subtle colour temperature differences between frames.

There's also a white balance bracketing feature that can act as a safety net when shooting JPEGs. This records three different versions of an image, with the colour temperature shifted between each. You can manually adjust the range over which the colour temperature varies, producing a set of images that have either subtle differences or more pronounced ones. You can also skew the colour balance towards green or ▶

STEP BY STEP
How to set a custom white balance

For more accurate colours, create a custom white balance. It's a bit fiddly, but the results are worth it...
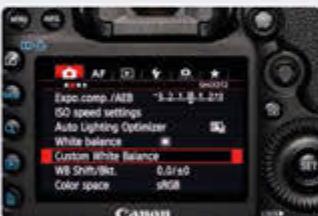
Shoot a white object
1 Take a photo of a white object – we're using a sheet of paper – or a neutral grey one in the same light as the subject. You don't need to fill the frame, just ensure the spot-metering circle is covered.

Choose Custom
2 Autofocus can fail when faced with a wall of white, so switch the lens to MF. Use exposure compensation to keep the image bright. In the red shooting menu, highlight Custom White Balance and press Set.

Import the WB data
3 You'll now be able to scroll through the images on your memory card to find the shot. Press Set to import the image's white balance data to the Custom White Balance setting on the camera.

Select Custom icon
4 To use this new setting, open the White Balance menu and choose the Custom icon on the right. This setting can be applied to both JPEGs and movies, and used for in-camera Raw processing.

Canon
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Creative 'mistakes'

Canon's white balance tools can be used creatively to introduce colour casts rather than removing them. Take pictures shot in rich golden light, such as a sunset or sunrise. In these conditions, the Auto White Balance setting sees the abundance of reds and oranges as a strong cast, and will attempt to remove them. The result will lack some of the original scene's fire. By choosing a preset designed for cooler colour temperatures – such as Cloudy or Shade – you can bring back the richness.

You can also do the reverse, adding a blue cast for a moodier result. The Tungsten preset can give a scene shot in cooler light a strong blue cast, which can accentuate an image shot at twilight, or add a 'moonlit' effect to images taken in daylight.

AUTO WHITE BALANCE
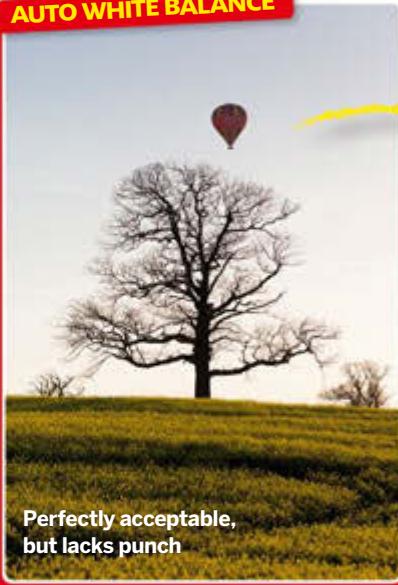
Perfectly acceptable, but lacks punch

SHADE WHITE BALANCE (7000K)
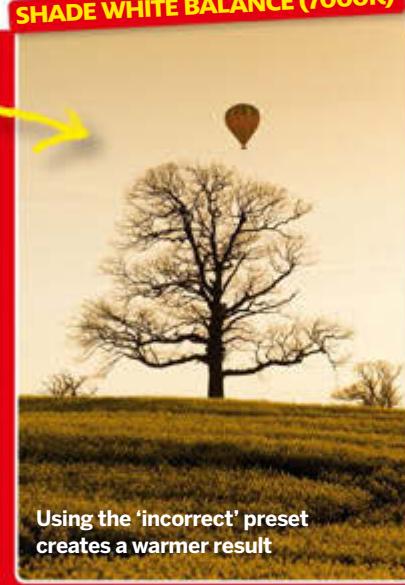
Using the 'incorrect' preset creates a warmer result

Live View advantage

Even though the white balance setting can be changed after you've taken a picture when you shoot Raw, it's good to get into the habit of setting it correctly in-camera. Doing this will make it easier to judge the colours on the rear screen, both when you're reviewing photos you've already taken and when you're shooting with the camera in Live View mode.

Because the Live View display shows a real-time preview of the image, you can instantly compare the effect that different white balance settings have on the subject before making the shot. It's particularly useful for fine-tuning the colour temperature using the Kelvin option in the white balance menu, rather than toing and froing between the viewfinder and image playback until you get the look you want.

Getting into the routine of checking the white balance before you shoot means there's less chance of errors occurring if you switch to recording JPEGs rather than Raw files, or you use Live View to shoot movies instead. As with JPEGs, any image-processing settings are permanently applied to video clips, and the wrong white balance can leave you with grotty-looking footage.

The Auto setting looks fine, until you compare it to the strongest Kelvin colour temperature available on the camera...

Raw is best

White balance, like many of your camera's picture-processing options, can be easily corrected or adjusted later if you shoot Raw files. You can, of course, remove a colour cast from a JPEG using Photoshop or similar software, but shooting Raw gives you a higher quality image to begin with and the freedom to make as many changes as you like.

The tools available in a Raw converter such as Lightroom or Canon's Digital Photo Professional (DPP) are easier to work with too, giving you a range of presets to choose from, just like the ones on your camera. You can also enter the Kelvin value, something you can't do on entry-level EOS cameras, or use an eyedropper to create a custom setting for each image.
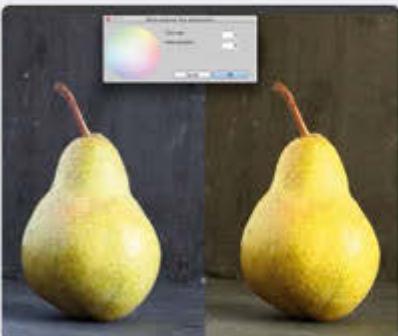
Use DPP to set the colour temperature in Kelvin degrees and make fine adjustments to the overall colour tone

Canon Workshop

AUTO WHITE BALANCE

AWB captures the scene authentically

TUNGSTEN WHITE BALANCE (3200K)

Choosing a cooler colour temperature adds blue mood
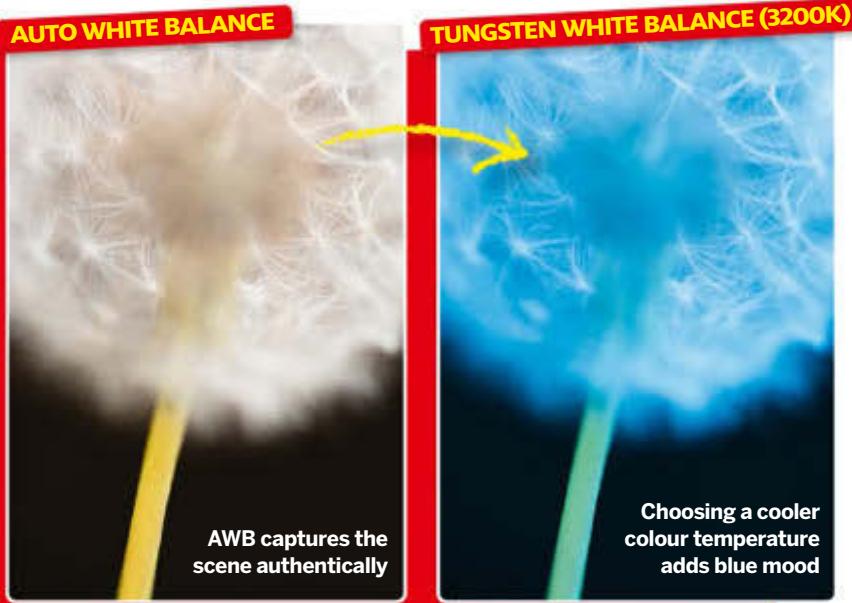
magenta, something you'd typically do when shooting under fluorescent lights.

Having all these controls does have a potential drawback, as by neutralising any colour cast there's a risk you'll suck the life out of a picture at the same time. In fact, white balance can be used as a creative tool to enhance the picture rather than just correcting it. For instance, manually choosing a colour temperature that's significantly higher or lower than the scene required for neutral whites can produce interesting results: a blue cast can complement a foggy scene, while a

yellow cast can add a more flattering tone to a portrait shot at sunset. By placing a 'CTO' warm-up gel in front of a flash and setting the camera's white balance to Tungsten, you can create moody outdoor portraits in low light; the subject lit by the Tungsten-balanced flash will have a correct colour balance, while the background has a strong blue cast. You can carry out these types of adjustments post-shoot too, using selective temperature adjustments in Lightroom or Adobe Camera Raw. If you don't like the results, you can always start again… ■

Fine-tuning the image

You can automatically bracket the white balance of a picture in a similar way to bracketing an exposure. Bracketing simply involves taking a number of identical frames, but with one of the shooting parameters changed each time. In this instance, three versions of an image will be saved to the memory card, each of which has a different colour temperature. White balance bracketing is available in the red shooting menu, under the heading 'WB SHIFT/BKT'. In addition, you can also 'shift' the white balance, adding or reducing the amount of blue/ amber or magenta/green.
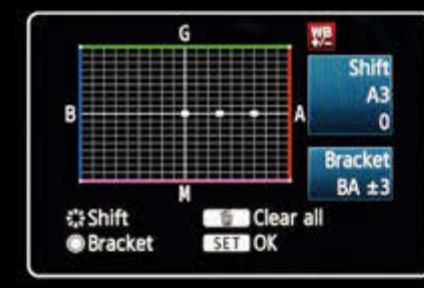
Here, we're bracketing three shots: one at the 'metered' white balance setting, plus two more with progressive amounts of amber added to the mix

5 great things about the...

Canon 1D X

We highlight an EOS camera or type of lens and provide priceless advice to get more from your gear

1 AF knowhow
Getting your head around the best way to configure the pro 1D X's 61-point autofocus system can be daunting. Your first step should be to download Canon's 48-page 1D X AF Setting Guidebook (http:// cpn.canon-europe.com).

2 Quick access to C
The 1D X can set up with a selection of Custom modes. Handily, the M.Fn button can be configured to give direct access to these C modes. If you only have one C mode set up, you can rapidly toggle between this and the current mode.

3 New aperture, same exposure
In Manual mode, the 1D X can shift either the ISO or shutter speed to maintain the same exposure if the aperture changes, allowing you to zoom a variable aperture lens without affecting the exposure.

4 ISO compensation
In addition to being able to set a specific combination of aperture and shutter speed and using Auto ISO to control exposure, you can override the camera's setting with ISO exposure compensation. Assign this function to the Set button.

5 JPEG quality
Straight out of the box, the 1D X is set to record JPEGs at a quality of Level 8. To reduce the compression for the best JPEG picture quality, increase this to the maximum Level 10 setting. The downside is that the burst rate may be reduced.

Canon Workshop

PROBLEM #16

Is there any point in using optical filters on lenses?

Learn why there's still a place for lens filters in your camera bag...

Back in the days of film, you'd have to use optical filters for a variety of reasons. In addition to protecting a lens against the elements and providing some protection against knocks, filters were used to correct the colour balance of film – for example to add a warm orange tint or a cool blue one to record a neutral result under different lighting, depending on the film stock you were using. Digital cameras don't need this type of filtration, as their white balance control enables you to neutralise any colour cast on the fly.

In the days before Photoshop, you'd often have to resort to using filters to achieve certain effects in-camera too, such as a soft focus filter to add a hazy look or a graduated tobacco filter to artificially boost a sunset. These days there's no need to try and achieve an effect like this in-camera; you can do it all post-shoot using digital filters, adjustment layers and other tools.

So, the only reason you still need to fit an optical filter on your digital camera lens is to protect it, right? Not quite. There are some filters that still have a place in the digital photographer's camera bag: a circular polariser, a solid neutral density (ND) filter and, arguably, a set of ND grads. The effects that these filters create can be painful to reproduce digitally, so it pays to get things right at the time of shooting.

You can replicate the effects of polarisers and ND grad filters in Photoshop – but you'll need an ND filter for extending exposures to create silky skies and seas!

Circular polarisers remove glare from non-metallic objects. They're particularly effective at cutting through reflections in water, as well as windows in buildings and cars. Landscape photographers love them because they can remove distracting shine from foliage and make colours appear more saturated, as well as boosting contrast between a blue sky and white clouds.

You can go some way towards reproducing the latter effect in Photoshop, but as for reducing glare and removing reflections – well, it'll take hours of painstaking work, if you can reproduce the effect at all.

There are some downsides to using a polarising filter. For a start, they're not cheap. In fact, a polariser will certainly be the most expensive filter you buy, this side of a LEE Big Stopper. As with all optical filters, adding additional glass to the front of your lens has the potential to reduce image quality, whether that's through an increase in flare (watch out for coloured 'halos' of light) or an overall reduction in sharpness. Buy the best you can afford – you're only likely to buy one of these things – in the

Real vs fake: Graduated ND filters

A neutral density graduated filter enables you to record detail in both a bright sky and a darker foreground. Position the clear part of

REAL ND GRAD

FAKE ND GRAD

the filter over the land and the darker part over the sky, and you bring the exposure of the two areas closer together, within the dynamic range of the

camera's sensor. Arguably, these days there's less of a need for these filters, as you can tackle exposure differences when you process your images. If the exposure difference is relatively small, you can darken the sky or lighten the landscape with an adjustment layer, and then mask the effect as required. If the exposure difference is more extreme, then shooting two or more 'bracketed' exposures with a tripod-mounted camera will enable you to blend the images to capture an expanded brightness range.

Why ND grad?

Without an ND grad, the contrast between the landscape and the sky may be too great for the camera to record detail in both areas in a single exposure. Expose for the land, and the sky may be overexposed and featureless; take a shot with the sky exposed correctly and the landscape may be underexposed.

Sky appears too bright　　**Sky exposed correctly**

Land exposed correctly　　**Land appears too dark**
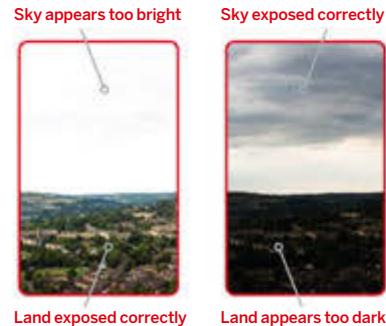
biggest lens diameter you own, and use step-up rings to fit it to your smaller lenses. Polarisers also cut the amount of light entering the lens, by approximately two stops when fully polarised. This can lead to slower shutter speeds, increasing the risk of motion blur or camera shake; one way to compensate for this is to increase the ISO.

If you *want* to capture the effects of motion blur, a standard ND filter is often the

way to go in bright conditions. These are a solid neutral grey, and are used to simply cut the amount of light entering the lens. They're available in a range of strengths, each rated for the number of 'stops' or exposure values they reduce the light by. So a three-stop ND (sometimes called a 0.9 ND or an ND8) enables you to reduce the shutter speed by three stops; for example, you could use a shutter speed of 1/15 sec ▶

> "A polariser will certainly be the most expensive filter you buy, this side of a LEE Big Stopper"

STEP BY STEP

How to use a digital ND grad

Get balanced landscape exposures by applying more than one graduated filter effect. Here's how to do it in Lightroom 5...

Identify the problem

1 Enable the highlight and shadow alerts by clicking the arrows at the top of the histogram. Here, you can see the highlights in the clouds are 'clipped'; the blue sky is also darker on the left.

Add a dark grad

2 To tone down the highlights, select the Graduated Filter tool, click the top of the image and drag down. Set the Exposure and Highlights to negative values to bring detail back to the brightest areas.

Add a bright grad

3 Repeat the process on the left of the shot, moving the Exposure slider right to lighten this area. Place the cursor near the centre point to rotate the gradient, and drag the top and bottom lines to adjust the size.

Add some colour

4 As a final touch, draw a third gradient down to the land and, rather than adjusting the exposure, tweak the white balance and add a hint of blue using the colour picker at the bottom of the menu.

Canon Workshop

Real vs fake: ND filters & polarisers

It's relatively straightforward to emulate the effects of ND grads in Photoshop, Elements or Lightroom, but doing the same for a polarising filter is more challenging. To boost the contrast between a blue sky and white clouds in a similar way to a polariser, shoot in Raw and process your files in Lightroom/Photoshop ACR. Select the Blue slider under the Lightness tab of the HSL panel, and drag it left to darken the sky. The giveaway that a polariser hasn't been used is the reflections in the windows; they're still present in the digital fake. Recreating the effect of an ND filter on moving clouds is easier: select the sky in Photoshop, then apply the Motion Blur filter.

REAL POLARISING FILTER

FAKE POLARISING FILTER

Optical filter pitfalls

While using filters at the time of shooting can mean less time spent in front of the computer, and is arguably more enjoyable, you will face a few problems. If you attach a filter to an ultra-wide angle lens, you may see it in the corners of your shots; this problem is exacerbated on full-frame cameras, or if you 'stack' more than one filter, and you'll have to either zoom in a little, crop the shot or choose thinner filters. If you're not careful when you position an ND grad, you may place the edge of the dark area over the land, so zoom into the image in Live View to check.

Polarisers present their own problem when used on wide lenses. The polarising

Fit a thick polariser to a 17mm lens on a full-frame 5D, and this is what you'll see!

effect on a large expanse of sky will be uneven, and you can end up with one area that's much darker than the rest. Again, choosing a longer focal length can help. You also need to shoot at right-angles to the sun for the best results.

There's also the matter of how much image degradation occurs when you slap extra layers of plastic or glass in front of a lens. Even though there's an increased risk of lens flare with cheaper, 'uncoated' filters, Canon actually advises attaching a filter to its weatherproofed L-series lenses to add the final layer of protection. So, buy the best you can afford — you won't see much, if any, softening of detail when using high-quality filters.

Viewing our ND grad shots from the previous page at 100%, there's no discernible softening when using a high-quality filter

NO FILTER

FILTER

Digital filter drawbacks

Although you can resolve exposure issues and recreate the effects of some filters in software, doing it digitally brings its own problems. For a start, you can only work with what you've recorded. If the highlights in the sky were severely overexposed at the point of capture, you won't be able to bring them back with a digital grad. As you can see in the image below, no amount of dark graduation can reveal detail in the cloud that's directly backlit by the sun — in fact, it looks terrible, with the bright area turning a flat grey. There's also a risk of increasing digital noise in shadow areas when you start pushing and pulling the exposure. As always, start with the best exposure you can get in-camera, and use digital tools to fine-tune the result.

If you haven't got it right in camera, attempting to recover highlights in software can make things look worse

REAL 10-STOP ND FILTER

FAKE ND FILTER

Colour casts

Some optical filters can create a colour cast, leaving images looking a little pink or too warm. To counter this, you could try using your camera's White Balance Correction option in the red shooting menu to tweak the amount of blue, amber, green and magenta; however, we'd recommend shooting Raw so that you can do this when you process the image. Strong ND filters can leave images with a heavy blue cast, so dial in a Kelvin white balance value of 7000K or more.

UNCORRECTED 10-STOP ND FILTER

CORRECTED 10-STOP ND FILTER

Xxxxx

to exaggerate movement where you'd normally use 1/125 sec. Faking a long exposure effect in Photoshop won't always look as natural as the real thing. It's fairly easy to select the sky and apply a blur filter to clouds, but adding motion blur effects to water, foliage and other objects is slightly trickier.

If you want to balance the exposure of a landscape and bright sky, tradition has it that you'd reach for a graduated ND filter. However, you can achieve the same effect by capturing one exposure for the sky and another for the landscape, and blending

them with layer masks or HDR software. This option is useful when areas of the scene would cross the boundary where the dark and clear parts of the filter meet, such as in cityscapes or a coastline with cliffs; if you used an ND grad you'd darken parts of the landscape, as well as the sky.

That aside, there's a lot to be said for getting it right in-camera. Spending a few more minutes fitting filters and working out exposure settings may save you time at the editing stage – and the satisfaction that comes from doing it 'hands-on' shouldn't be overlooked either! ■

5 hints and tips for...

Wide-angle lenses

We highlight an EOS camera or type of lens, and offer expert advice on how to get more from your gear

1 Avoid the edges
When you compose with a wide-angle lens, avoid framing the shot so tightly that key elements are near the edges of the picture. If you apply Lens Correction in Lightroom or similar, these areas may be lost as the corrections are applied.

2 Avoid the edges II
Like most lenses, wide-angle lenses are at their sharpest and brightest at their centre, so that's another reason for avoiding the edges of the frame. Try stopping down from the widest aperture to around f/8 for optimum sharpness.

3 Get in close
Wide-angle lenses aren't usually the first choice for tight portraits, as they distort features. However, they're an excellent choice for getting in close and showing a subject in context with the surrounding environment.

4 Shoot from the hip
Wide lenses are great for street photography and other times when you need to shoot unobtrusively. To avoid bringing the camera to your eye use Live View, or simply pre-focus the lens manually at a set distance, and shoot without looking.

5 Clean backdrops
Trying to isolate a subject against a soft, diffuse background is harder with a wide-angle lens than it is using the narrow viewing angle of a telephoto, so get close, use wide apertures and try to include a 'clean' backdrop, such as the sky.

Canon Workshop

PROBLEM #17

Should I bother with Wi-Fi?

Discover the advantages and disadvantages that Canon's wireless EOS cameras offer...

Wi-Fi adaptors were originally designed for transferring images from the camera to a computer network without having to physically connect them. They make a huge difference to the workflow of sports photographers, whose pictures can be quickly transferred to clients and picture desks without having to take the card out of the camera and loading the images onto a laptop. Shooting wirelessly can also be a benefit to studio and event photographers; being able to review the results within a few seconds enables you to quickly fine-tune poses and lighting, while the opportunity of working without a cable snaking from the camera to the computer means more freedom and no trip hazards.

Remote possibilities

Canon's range of 'WFT' wireless units brings Wi-Fi functionality to EOS cameras, but there are currently two D-SLRs that come with Wi-Fi built in. The 6D was the first model, followed by the 70D. Although you can use this function to transfer images wirelessly, you can also trigger these cameras remotely. By downloading Canon's EOS Remote app to an iOS or Android device you can connect to the camera either directly or over an established Wi-Fi network. Doing this enables you to activate Live View, make adjustments to a selection of key camera controls such as focusing, aperture, shutter speed and ISO, and fire the shutter.

Downloading the EOS Utility software that came with your camera allows you to do the same using a laptop or desktop computer, with the added benefit of being able to alter a greater number of camera settings (including white balance and picture styles) and review your images on a larger screen.
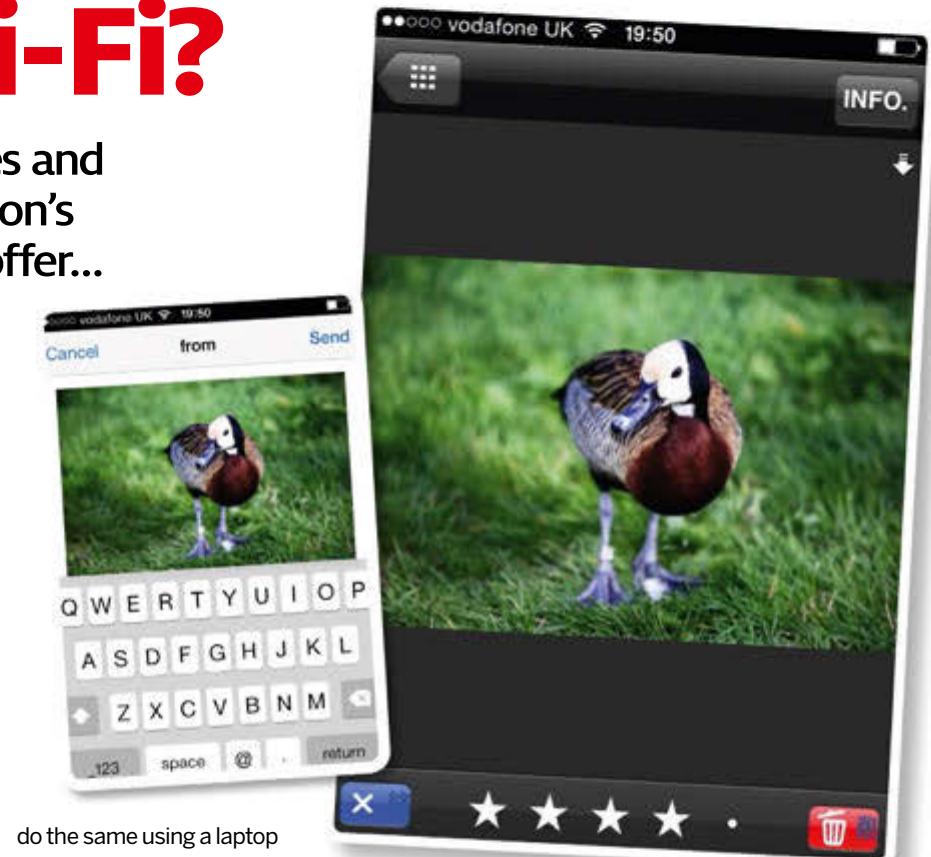
Being able to take pictures without being near the camera means you can take pictures that would be too difficult or impossible to achieve with you hanging around behind the viewfinder. Naturally, this

"Get an additional battery if you plan on using the Wi-Fi function extensively"

The EOS Remote app enables you add a star rating, save S2-sized JPEGs to your smartphone and then email them, or delete them from the memory card

type of remote work lends itself to wildlife photography, where otherwise you may have to sit in a cramped hide for hours, days or weeks in order to get close enough. There are some downsides to using the current range of Wi-Fi-enabled cameras as a sort of surrogate wildlife camera trap though. First up is diminished battery life: this is particularly noticeable if you don't have a clear view of the camera position and need to activate the Live View display in order to be able to judge when to fire the shutter. Leave Live View on for long periods and the camera will get too hot, with the display having to subsequently shut down.

We'd certainly recommend an additional battery if you plan on using the Wi-Fi function extensively, and for convenience consider using a battery grip that holds two batteries. It may seem counter-intuitive, but disable the camera's Auto power off function too (you'll find this in the yellow setup menu). The reason for this is that if the camera goes to sleep while Wi-Fi is active, the connection will be lost. Both of these tricks make a difference when you don't want to keep returning to a remotely positioned camera.

In short bursts though, remote shooting with a smartphone is a relatively painless experience (if you can stomach the delayed, juddery feed – it's not exactly 'live' view!). The initial setup can be a little fiddly, with plenty of toing and froing required between the app and the camera, but the key is to follow the instructions on the back of the camera and on the device in the order that they appear. When you first activate the camera's Wi-Fi functionality, you'll need to create a nickname for the camera so that you can identity it (this can be changed later). Many of the features require a connection to a Wi-Fi network, be that your own internet connection at home or a public one, although you can turn the camera into a Wi-Fi access point when you want to control it directly. There are numerous menus to negotiate when you're initially trying to establish a connection to each device, but you can save these settings ▶

Canon's EOS Remote app

You can download Canon's free Wi-Fi app for your iPhone/iPad or Android device. Here's a handy guide to its main features to get you up and running

Home
Use this to return to the main screen, where you can change the app settings or view the images saved on the memory card.

Display adjustment
This arrow reduces and expands the depth of the panel at the foot of the screen.

Thumbnail display
Tap this to open and close the thumbnail display at the bottom of the screen.

Shutter
The large button is the shutter release – press to activate autofocus and metering and take a shot. The smaller button is hidden by default and has to be activated in the app settings menu. It acts like an AF-ON button/AE button: Tap once to activate the metering; press and hold to activate autofocus; slide it up to shoot.

Information display
Tap to toggle camera info on or off. You can view metering mode, white balance and picture quality, but can't alter them.

Orientation
Lock the screen in either horizontal or vertical display.

Live View
Toggles the Live View screen on the camera on and off, helping preserve battery life.

Shots/battery life
A constant on-screen reminder of how quickly the camera battery is draining – and how few pictures you have remaining…

Settings
Change ISO, exposure compensation, focusing position and aperture/shutter speed settings.

Focus point
Move the focus point around the image by touching the screen. The weaker the Wi-Fi signal, the more noticeable delay there is between touching the screen and the focus point moving.

STEP BY STEP

How to pair an EOS D-SLR and smartphone
Here are the essential steps to follow when you want to use your phone to control a compatible Wi-Fi camera
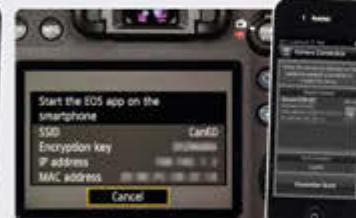
Enable Wi-Fi
1 Select the Wi-Fi option and press Set to be taken to the enable/disable screen. Once activated, select the Wi-Fi function menu. The first time you do this you need to register a nickname for the camera.

Choose connection
2 You can now select Wi-Fi. Choose the smartphone function and you have the option of connecting directly to the camera or via 'Infrastructure mode', which means through an existing Wi-Fi network.

Start the connection
3 Go for direct connection and choose 'Easy' setup. The camera will then display an 'Encryption key'. Open up your smartphone's Wi-Fi menu and select the camera's nickname, then enter the passcode.

Open EOS Remote
4 The display on the camera instructs you to start the EOS Remote app. Tap 'Camera Connection' on the app home screen to pair the device and camera and, after a slight delay, you'll be good to go.

Canon Workshop

Wireless LAN options

A Wi-Fi EOS D-SLR offers more than just remote shooting. Look at the options you get with a 6D...

Connect to smartphone
Download EOS Remote first, then you'll be able to control the camera, view images and store them as JPEGs on your device.

Transfer images between cameras
Share JPEGs between Canon cameras with built-in wireless functions from 2012 or later. Movies can also be transferred.

Print images with a Wi-Fi printer
Connect the camera to a wireless LAN-compatible printer that supports PictBridge (DPS over IP) such as the PIXMA MG7120.

General settings
Press the Info button to change the camera's wireless LAN nickname and clear the current Wi-Fi settings.

Remote control using EOS Utility
Operate your camera wirelessly from a laptop or desktop computer using Canon's free software.

View images on DLNA devices
Browse your images on TV. You'll need a TV or a media player that supports DLNA though.

Previous screen
Press the Menu button to go back a screen. Menu also confirms when registering a nickname.

Upload to a web service
Share your pictures using services such as Facebook, Twitter and Canon's updated Irista.

How do I know Wi-Fi is working?

The Wi-Fi setting and the connection status can be monitored on both the rear screen and the top LCD screen. Here's what they're telling you...

1. When Wi-Fi hasn't been enabled, it says 'Off' on the top LCD screen. Once Wi-Fi has been activated, the icon above the word 'Wi-Fi' blinks.

2. When a connection is made, the icon becomes solid. If both the icon *and* the words are blinking, then there's a connection error.

3. When Live View is active, the Wi-Fi function icon (right) and connection status icon (left) are visible on the rear screen. If the 'beams' on the Wi-Fi icon are moving this means that data is being transmitted. If the entire Wi-Fi icon is blinking, and an '!' icon is visible, it means there's a connection error.

EOS Utility

EOS Utility offers more control over the camera settings than the EOS Remote app, and being able to view the image on a larger screen can make it easier to compose and check sharpness. It's a good option when you're working in a studio environment.

Before you can start shooting, you'll need to pair the software and camera over Wi-Fi. When you open EOS Utility without a camera connected to the computer via USB, the EOS Utility Launcher software gives you the option to detect and connect to cameras on your Wi-Fi network. You'll obviously need Wi-Fi to be enabled on the camera first for it to be discovered.

Click 'Pairing over Wi-Fi/LAN' button on the EOS Utility Launcher software to detect Wi-Fi-compatible cameras

STEP BY STEP

Connecting to a TV

Displaying photos from a memory card on a DNLA-compliant TV via Wi-Fi is more convenient than connecting your camera with a cable. Here's how it's done...

Wireless LAN setup method
- ◉ Find network
- ○ WPS (PBC mode)
- ○ WPS (PIN mode)

Scan for nearby access points

Cancel | OK

Select wireless network
- ○ Infrastr. 1ch
- ○ Infrastr. 1ch
- ○ Infrastr. 3ch

Enter connection

Search again

Cancel | OK
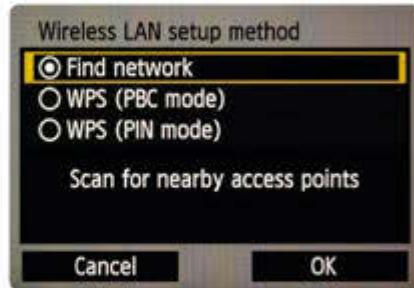
1 To connect the camera and DNLA-compatible device, both will need to be hooked up to a wireless network. The most straightforward method is to let the camera scan for a network.
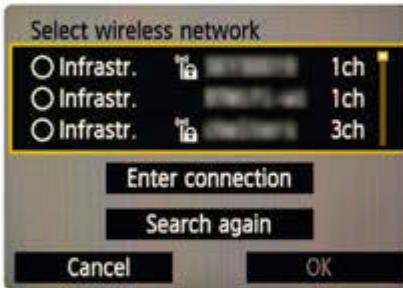
2 You may end up with a significant number of networks to scroll through. Use the up and down arrows on the back of the camera to find your preferred network access point, then press Set and select OK.

3 You'll need to enter the encryption key/passcode for the wireless access point. The screen displayed will be determined by the type of authentication required for the access point.

under different 'sets' for easy reconnection later across multiple devices. For instance, on a 6D you can register up to three connection settings for smartphones and three for printers.

Shooting wirelessly using a camera with a built-in Wi-Fi module does have some drawbacks. You can't record movies, for instance, and you can't transfer Raw files between Wi-Fi-enabled cameras or to a smartphone. The huge file sizes involved would just take too long to shift, and battery life would be considerably shortened. You can still record Raw files to the memory

card though, it's just the transferred image that gets compressed.

The strength of the Wi-Fi signal is another factor to consider. When you're working at home with everything hooked up to your Wi-Fi router, there's usually no problem. But walls and other objects between the Wi-Fi access point and the camera and other devices can reduce the signal strength. We experienced notable slowdown when streaming full-screen pictures wirelessly from a 6D to a flatscreen TV because our wireless broadband router was in a different room, for instance.

However, we had no problem with signal strength when connecting a smartphone directly to the camera and operating it outdoors at a distance of around 10 metres (well within the 6D's rated 30 metre range).

A built-in Wi-Fi module is set to become a new EOS camera standard (although the new EOS 7D Mk II doesn't have built-in Wi-Fi! See page 55 for more details) and it offers the potential to realise some creative photo opportunities that would be too costly or time-consuming to achieve any other way. We just wish battery life and Canon's EOS Remote app performed a bit better... ∎

5 hints and tips for...

Telephoto lenses

We highlight an EOS camera or type of lens, and offer expert advice on how to get more from your gear

1 Selective focus
Telephoto lenses make it easier to achieve shallow depth of field effects than wide-angle lenses do. Set the widest aperture available and selectively focus on a subject close to the front of the lens to blur distant objects.

2 Tripod collar
Telephoto lenses usually come with a tripod collar. Use this to attach the lens directly to the tripod for sharper photos. Rotate the foot above the lens when shooting handheld, to enable you to cradle the lens more effectively.

3 Focus limiter
Telephoto lenses often end up 'hunting' for a focus, so use the focus limiter to speed things up. If you anticipate your subject being close, use the minimum setting.

4 Minimum focusing distance
Not all lenses are made equal when it comes to the closest distance at which they can focus. The shorter the minimum focus distance, the better your chance of creating a frame-filling shot.

5 Weight
Telephoto lenses with fast apertures are heavy, so take this into account if you're going to be travelling with it. This Sigma 150-500mm weighs almost the same as two bags of sugar – this might seem hefty, but it's not bad for its focal length.

Canon
Workshop

PROBLEM #18

What's the trick to long exposures?

Improve your slow-shutter-speed scenic shots and capture pictures worth waiting for…

What's the big deal with long exposures? Isn't it all standing around for hours at a time, watching the camera battery empty faster than Hamleys on Christmas Eve – only to find that you've cocked up the exposure and have to repeat the process all over again? Well, yes. In many cases it is. But a long exposure can produce a more interesting photo than a standard exposure, recording something that the eye can't normally see and giving pictures a painterly, impressionistic look. Reality can be dull, and using a slow shutter speed to render movement as a blur adds an unpredictable

quality to photography. The trick is to keep the camera perfectly still so that only moving parts of the scene become blurred while the rest remains sharp, with the motion blur of flowing water, clouds and wind-blown vegetation helping to create individual interpretations of some very familiar views.

But just how long is a 'long' exposure? A second? Several minutes? An hour? The truth is that there's no one-size-fits-all definition and it depends on the speed of

Long Exposure Noise Reduction removes 'hot pixels' from long exposures, but doubles the time taken to record a picture

the subject you're taking pictures of, as well as the effect you're trying to achieve. For instance, if you're shooting Formula 1 using an exposure time of 1/30 sec, then even that fraction-of-a-second exposure is ludicrously long relative to the subject's momentum, and that's going to deliver acres of motion blur. Used to photograph a calm sea, the same 1/30 sec exposure time would produce almost no motion blur. In fact, a very subtle amount of blur can end up looking like a mistake. So when you want to show the movement of the waves and the slow burn of clouds across a landscape, you're invariably chasing exposures that last several seconds to minutes.

Suffering from exposure

And you will end up chasing exposures. In broad daylight, shutter speeds that last for seconds can prove elusive. The lens you're using may not offer an aperture narrow enough to give shutter speeds that slow, even with the camera's ISO sensitivity cranked to its lowest value. Besides, using the narrow aperture available on a lens will only leave you with a soft picture, so it's unlikely you'll want to stray too far from f/11 to f/22 – further reducing your shutter speed options. To get around this problem you'll need to reduce the amount of light that's able to enter the lens, and the most effective way of doing this is by using a neutral density (ND) filter.

These filters are available as both circular screw-on filters and as part of a square filter system, such as those from Cokin and Lee. They come in various densities of grey and

Quick fixes for long exposures

There are a number of aspects you should be aware of if you're going to get good results...

Dark corners
If you stack filters, there's a chance you'll see the edge of the front filter in the corner of the image. It's worth checking the Live View screen before you shoot – unlike most viewfinders, this shows the full 100% view.

White balance
Very strong ND filters can leave your pictures with a colour cast. You can fix this by choosing the Kelvin (K) option in the White Balance menu, but we'd recommend changing the Picture Quality to Raw and altering the white balance when you process the image instead.

ND grad
If the sky is brighter than the land, there's a chance that detail here will be burned out, especially if you use a very long exposure. To solve this, fit an ND grad filter in front of the ND filter, with the dark portion over the sky.

Circular polariser
The amount of light passing through the filter is reduced by around 2.5 stops at full polarisation, which needs to be factored into your long exposure calculations.

can be used in different combinations to give you plenty of options when it comes to finessing the long-exposure effect. Each ND filter is rated by the amount of exposure 'stops' of light it blocks. As the name indicates, a 3-stop filter reduces the light so that a shutter speed three stops slower than would normally be used to record a picture is required. If your camera suggests an exposure of 1/40 sec at f/16 without a filter,

then adding the three-stop ND would let you achieve the same overall exposure using 1/5 sec at f/16. Remember that each stop represents double the length of exposure; so 1/40 to 1/20 is the first stop, 1/20 to 1/10 the second stop and 1/10 to 1/5 the third stop. Somewhat confusingly, though, the same 3-stop filter can be rated 'ND8' or '0.9ND', depending on the system that different manufacturers use. ▶

> "A very subtle amount of blur can simply end up looking like a mistake"

STEP BY STEP

Set up your Canon D-SLR for long exposures

Four simple steps to get your camera ready for slow-shutter-speed shots

Select Bulb mode
1 Bulb mode allows you to shoot slower than 30 secs. Some cameras have a Bulb option (B) on the mode dial. If yours doesn't, select Manual mode (M) and scroll past 30 secs until 'bulb' appears.

Use a remote release
2 Bulb mode starts the exposure when you press the shutter release and ends it when you take your finger off it. You'll likely jerk the camera when you do this, so it's far better to use a remote release instead.

Block the viewfinder
3 You need to prevent stray light from entering the viewfinder or you may end up with ghostly halos. The 1D X has a built-in viewfinder blind, while other Canon D-SLRs come with a replacement rubber eyepiece.

Activate Live View
4 Live View enables you to compose and manually focus, even with a 10-stop ND filter on the lens. Take a spare battery – the combination of long exposure times and Live View chews through the power.

Canon Workshop

ND filter strength

Your choice of shutter speed make a massive difference to the look of your long exposures. Too fast and the sense of motion will be almost imperceptible to viewers, too slow and you'll lose all texture in moving parts of the scene. Either might be acceptable though, depending on the look you're after. Here, we used three popular strengths of ND filter, as well as a naked lens, to illustrate some possibilities. You can see that even the 3-stop ND filter softens the surface of the river just enough to make it fight less with the buildings for attention than in the naked shot. Step up to the 6-stop and the sense of motion is noticeably stronger without losing texture in the water's surface; by the time you reach the 10-stop there's no detail in the sky and the water looks like ice. Each picture offers a different take, with the choice coming down to personal preference.

NO FILTER 1/15 SEC

3-STOP ND 1/2 SEC

Equivalent exposures

Here's a handy table illustrating some common shutter speeds, along with the adjusted shutter speed for a range of filters. Read down the 'No filter' row to find the shutter speed reading you get without a filter in place, then read across the column to the strength of the filter you have in front of the lens. The precise shutter speed may vary by 1/3 to 1/2 stop, depending on the filter manufacturer and strength of the filter. When you reach the likes of a 10-stop ND, some filters from the same maker may turn out to be closer to 9.5 stops in while others are nearer 11 stops. Experiment to find out!

ND filter strength						
No filter	2-stop (ND4 or 0.6ND)	3-stop (ND8 or 0.9ND)	4-stop (ND16 or 1.2ND)	6-stop (ND64 or 1.8ND)	8-stop (ND256 or 2.4ND)	10-stop (ND1024 or 3ND)
1/1000 sec	1/250 sec	1/125 sec	1/60 sec	1/15 sec	1/4 sec	1 sec
1/500 sec	1/125 sec	1/60 sec	1/30 sec	1/8 sec	1/2 sec	2 sec
1/250 sec	1/60 sec	1/30 sec	1/15 sec	1/4 sec	1 sec	4 sec
1/125 sec	1/30 sec	1/15 sec	1/8 sec	1/2 sec	2 sec	8 sec
1/60 sec	1/15 sec	1/8 sec	1/4 sec	1 sec	4 sec	16 sec
1/30 sec	1/8 sec	1/4 sec	1/2 sec	2 sec	8 sec	32 sec
1/15 sec	1/4 sec	1/2 sec	1 sec	4 sec	16 sec	1 min 4 sec
1/8 sec	1/2 sec	1 sec	2 sec	8 sec	32 sec	2 min 8 sec
1/4 sec	1 sec	2 sec	4 sec	16 sec	1 min 4 sec	4 min 16 sec
1/2 sec	2 sec	4 sec	8 sec	32 sec	2 min 8 sec	8 min 32 sec
1 sec	4 sec	8 sec	16 sec	1 min 4 sec	4 min 16 sec	17 min 4 sec
2 sec	8 sec	16 sec	32 sec	2 min 8 sec	8 min 32 sec	34 min 8 sec

It's all about the timing...

Once you know the length of exposure you need to use, what's the best way of timing it? There are many filter apps for smartphones that will do this for you, in addition to helping you work out what shutter speed is required in the first place, along with any adjustments for other filters that are stacked on the lens.

Some EOS cameras offer a bulb timer as well. Obviously you can do the timing yourself using a watch or a phone, but don't worry too much if you're not precise when it comes to measuring very long exposures – a few seconds here or there won't make much difference when you're talking about exposures that stretch for minutes.

Above Use a remote release to hold the shutter open, then follow the timer
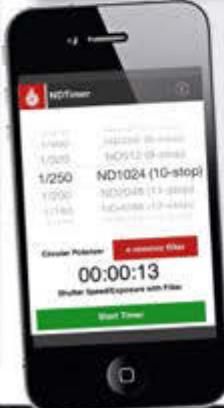
Left The NDTimer app (three60.com/ndtimer) offers a simple interface for working out the exposure, along with a timer

**6-STOP ND
4 SECS**

**10-STOP ND
70 SECS**

Avoid the narrowest aperture!

Although the narrowest aperture on your lens will produce the longest exposure time, you really shouldn't use it as the effects of diffraction are most noticeable at this setting. Diffraction is when the light rays coming through the lens are essentially bent out of shape by the edges of the small hole, leading to fuzzy results even when the lens is focused accurately. This happens at all aperture settings, but is most noticeable at the narrowest settings – such as f/32 on the 70-200mm lens we used here. Viewing the image at 100% shows just how bad the effect can be.

A 3-stop filter might produce a long enough exposure in low light, but in the middle of a calm, bright day it's unlikely to have much of an impact on the image. That's why many keen landscape photographers reach for the 10-stop ND filters. These filters are so dark that you won't be able to see anything through the viewfinder when you fix them to the front of the lens – although Live View helps here. That 1/40 sec exposure? With a 10-stop ND, that's now a 25-sec exposure. Stack a 10-stop ND with another ND filter or a circular polariser (which also cuts the amount of light by up to 2.5 stops) and you're likely to go beyond the realms of the

exposure system for your camera. Your camera maxes out at a shutter speed of 30 secs – anything longer than this requires you to time the exposure yourself using your camera's Bulb mode.

Whatever shutter speed you choose for your long exposure, you're going to need a tripod. You'll also need to approach the shooting as rigorously as you would your other pictures, triggering the shutter with a remote release and using Live View or Mirror Lock-up to prevent vibrations. The slapping action caused by an unlocked mirror may only last a tiny amount of time and is unlikely to register in a very long exposure, but it's not worth the risk. ■

f/11   **f/32**

5 hints and tips for...

Super-telephoto lenses

We highlight an EOS camera or type of lens and provide priceless advice to get more from your gear

1 Get close
If you're shooting wildlife, don't think a 600mm prime will be the answer to all your image size problems. You still have to get surprisingly close with a super-telephoto lens if you're going to fill the frame, so factor in the cost of a hide to your bill.

2 Lens plate
A foot plate is an essential super-tele accessory that enables you to slide the lens backwards and forwards in the tripod head for a better balanced rig. You may need a ball head upgrade too, as your current one may not support the lens weight.

3 Set the focus
Canon's cannons have a Set button that allows you to preset a focus distance; handy for speeding up focus acquisition on a bird or animal if you know a point they're likely to move to.

4 Fight the power
A useful autofocus feature, if you shoot video, is Power Focus (PF), which you'll find on the AF slider on the lens barrel. This adjusts the focus at a constant speed, for smooth transitions when you want to pull focus between two points.

5 In the hood
Using the hood provides some level of protection should the lens nose-dive to the floor from an unattended tripod. Make sure the lens is insured, even if hiring it (and we'd hire rather than buy one of these beasts every time).

Teach yourself
Photography

Improve your pictures by buying an interactive video app, a DVD-Rom or a 228-page book. Six great titles to choose from...

Teach yourself
Black & White Photography

Master mono photography – from visualising the shot through to how to get the best results when editing

Teach yourself
Photography

Beginner's guide to understanding the key settings on your digital SLR so that you can take better shots

Teach yourself
Lightroom
Get to grips with Adobe's powerful Lightroom image editing program with our complete instructional course

Teach yourself
Photoshop
Complete instructional course on mastering Adobe's powerful Photoshop CC image editing program

Teach yourself
Photoshop Elements
Elements is a more powerful editing program than its low price suggests. We help you unlock its full potential

Teach yourself
Raw in Photoshop
Serious photographers shoot in Raw... We give a complete guide to unleashing the power of this professional file format

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Essential SLR skills

Breathtaking landscapes

WORDS **PETER TRAVERS**
LOCATION SHOTS **JOBY SESSIONS**

Discover how to capture stunning images of wild and watery scenics as professional landscape pro Mark Bauer shares his secrets with an apprentice in the spectacular Lake District

THE PRO...

Name: **Mark Bauer**
Camera: **Canon EOS 5D Mk III**

Mark, aged 48, is originally from Newbury and now based in Swanage in Dorset. He took up photography in the 1980s, and has been a professional landscape photographer for ten years. To see Mark's fantastic portfolio of landscape images, and for details of his inspirational photography workshops, visit www.markbauerphotography.com.

THE APPRENTICE...

Name: **Martin Stroud**
Camera: **Canon EOS 600D**

IT manager Martin has been living in Cumbria for the past 12 years. He's been a keen photographer for 20 years, and his first D-SLR was a Canon EOS 350D – he upgraded to a 600D, but would now like a 70D! Martin enjoys walking and loves to photograph the scenery of the Lake District, and wants to improve his landscape skills so that he can do justice to this beautiful location. ▶

▼ Martin's comment

"We got up early to greet the 5am sunrise for this shot of boats beside Derwent Water. I used the wide 18mm end of my standard EF-S 18-55mm kit lens at f/16. Composition was one area where I really needed some help, and I was surprised at how much time Mark spent trying shots, both standing up and crouched down. I was also interested to see how close he gets to a scene for the best framing. I'd always stood well back and tried to include everything I could see, but by using a wide-angle lens, stepping in closer and filling the foreground with interesting elements (the boats in this case) I was able to instantly improve my results."

MARK'S TIP

Map out your locations

"I always carry an OS Explorer map of the area I'm photographing (in this case OL4 The English Lakes)," says Mark. "It enables me to plan my day, and work out which locations to photograph and whether or not they're linked by paths or lanes. I can also work out when the light will hit different locations, and so which will work better at sunrise, midday and sunset – and if any big mountains will enhance the backgrounds, or get in the way and block the light."

HOT SHOT #1

Exposure: 2.5 secs at f/16; ISO100
Lens: Canon EF-S 18-55mm f/3.5-5.6 IS

MARK'S TIP

Focal length and framing

"I'll try a variety of focal lengths to see which composition I like best, and then work on my preferred composition further," says Mark. "For this early-morning shot I'm not sure if I prefer the 55mm shot, with the hillside and forest dwarfing the house, or the tighter 125mm shot showing the warm light on the house, balanced by the foreground stones and the hazy forest behind."

18mm

55mm

125mm

Martin goes in at the deep end...

Mark helped Martin fine-tune his Canon D-SLR settings to ensure front-to-back sharpness

Narrow apertures for greater DoF

"Martin was relying on his Canon D-SLR's auto shooting modes, so I introduced him to the semi-auto Aperture Priority mode (Av), so that he could control his aperture setting to get the best combination of image quality and depth of field," says Mark. "I got Martin to set the aperture to f/16 for most of his shots, as this offers the optimum image quality and a broad depth of field to keep everything in focus."

Focus for maximum sharpness

"Martin was struggling with his focusing, as he wasn't sure where or how to focus," says Mark. "He was relying on Auto AF Point Selection, which uses all the AF points and focuses on whatever's closest to you, and this can result in objects in the middle distance and background being out of focus. I got Martin to set his lens to manual focus, then switch to Live View, zoom in and adjust the focusing ring to focus about a third of the way into the scene for perfect sharpness." ▶

Essential SLR skills

HOT SHOT #2

Exposure: 1 sec at f/16; ISO100
Lens: Canon EF 16-35mm f/2.8L II USM

Mark's Canon kit

Mark uses a full-frame Canon EOS 5D Mk III body and also carries the following gear:

Canon EOS 5D Mk II back-up body
Canon EF 16-35mm f/2.8L II USM
Canon EF 24-105mm f/4L IS USM
Canon EF 70-200mm f/4L USM
Zeiss 21mm prime lens
Canon RS-80N3 remote control
Set of Lee Filters: NDs, ND grads, polariser
Gitzo carbon GT2542LS tripod with Manfrotto 405 three-way head
Tilopa F-stop camera backpack
Apple Macbook Pro laptop
Apple iPhone 5 smartphone

▲ Martin's comment

"For this classic shot of Ashness Bridge I borrowed Mark's meaty EF 16-35mm f/2.8L wide-angle lens, and he helped me attach a 4-stop neutral density filter to slow down the shutter speed (from 1/13 sec to 1 sec) to capture a little movement in the running water. He also slotted in a graduated ND filter to darken the brighter sky, and it was amazing the difference this made, creating a balanced exposure across the frame and capturing a full range of tones from highlights to shadows."

MARK'S TIP

Use your histograms

"Live View isn't just for composing your images; you can use it to help you *expose* your shots too, by using the Live View histogram," says Mark. "In Av (or Tv) mode, you can dial in exposure compensation to brighten or darken a shot, and ensure that a full range of tones is registered on the histogram. You can also check your histograms post capture on the LCD."

KILLER KIT OF THE PROS #1
Solid tripod

"A tripod is an essential tool for landscape pros," says Mark. "More often than not I'll use shutter speeds that are too slow to shoot handheld, and a tripod ensures that I'll capture blur-free shots however long the exposure. A tripod also enables you to compose accurately using Live View, as you can make the miniscule adjustments that are sometimes all that's needed to remove a distracting element at the edge of the frame. I use a Gitzo carbon GT2542LS tripod with Manfrotto 405 three-way head."

KILLER KIT OF THE PROS #2
Remote control

"The very act of pressing the shutter button, even when your camera is fixed on a tripod, can be enough to jog your camera at the start of the exposure – and the result is a blurred shot," says Mark. "This becomes even more of an issue if you're taking long-exposure landscapes, so I always use my Canon remote control to trigger my exposures. A remote's also invaluable when shooting in Bulb mode (see page 14), as you need to press the shutter button once to start the exposure and again to finish it."

Mark's top lakescapes…

From dawn to dusk, Mark talks us through three of his favourite lakeside landscape shots…

Grasmere

1 "This view over Grasmere from Loughrigg Terrace is one of my favourites in the Lake District, especially in early autumn, when the leaves are beginning to turn, as in this shot. I set up before dawn, and when the mist began to lift and revealed the lake it was time to press the shutter."

Derwent Water

2 "Fences in the water are a feature of the Lake District in autumn, and they add foreground interest in wide-angle shots from the shoreline. For this shot, a five-minute exposure using my Lee Big Stopper has smoothed out the ripples in the water, and captured the movement of the clouds."

Sunset

3 "A still day in December provided the ideal conditions for capturing a perfect reflection of the colourful sunset in this small lake near the Cotswolds. The reeds provided foreground interest, and it was calm enough that they didn't move during the 1.5-second exposure." ▶

MARTIN'S TIP

Hip to be square!

"I'd never considered cropping images to a square format, but Mark showed that with the right scene and composition, it can work wonders!" says Martin. "He also showed me that on my 600D, under the Aspect Ratio menu option, I can display crop marks on the screen when I'm reviewing images to see how they'll look with a square (1:1) crop. We added a basic white frame to this image in Photoshop Elements."
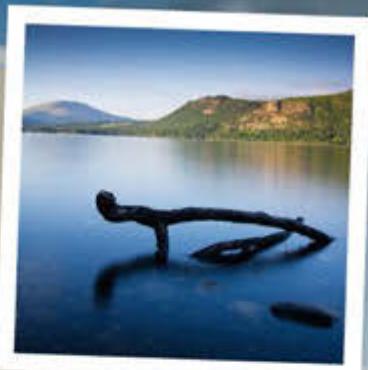
KILLER KIT OF THE PROS #3

Filters

"Filters are a landscape photographer's secret weapon!" says Mark. "A neutral density graduated (ND grad) filter is great for darkening bright skies to capture more detail in clouds and deeper blues, and for a balanced exposure. I also use a polariser during the day, to enhance blue skies and the overall contrast of a scene. While you can add grad filter effects post-shoot, you can't beat the satisfaction of getting it right in camera!"

EXPERT INSIGHT

Controlling shutter speed

"Learning to control shutter speed is the easiest way to turn scenic snaps into pro-looking shots, with glassy waters and movement in skies," says Mark. "To do this effectively, use a 10-stop ND filter (see above right) and use the Bulb setting if you need a shutter speed beyond 30 secs. If your D-SLR dial doesn't have a B mode, dial past 30 secs when setting the shutter speed in Manual mode to find Bulb. Using your remote control, press once to start the exposure, and again to end it. You'll still need fairly low light conditions, so shoot early in the morning or early evening. For this shot, at f/22 and ISO100, we obtained a shutter speed of 1/15 sec. A 10-stop ND reduced this to 60 secs – and look at the difference!"

1/15 sec

60 secs

KILLER KIT OF THE PROS #4
10-stop ND filter

"10-stop neutral density filters are very popular these days," says Mark. "They enable you to shoot in brighter conditions, rather than at first or last light, and will turn exposures from seconds into minutes to beautifully blur waters and skies and add a sense of movement to landscape shots. I use the Lee Big Stopper – it's expensive but it's high quality, and it captures a true representation of a scene's colours, even when blocking out ten stops of light!"

HOT SHOT #3

▶ Martin's comment

"This small lake, Watendlath Tarn, was a beautifully secluded spot. It was 5pm by now, but the sun was still beating down, and the sky was blue with some atmospheric clouds – and Mark's ND grad and polarising filters helped make it even more punchy and dramatic. We tried this shot in landscape format, and also with two boats, but we both preferred this vertical composition, with one boat big in the foreground; using a wide-angle lens close up I've exaggerated the bow." ▶

Exposure: 1/8 sec at f/16; ISO100
Lens: Canon EF 16-35mm f/2.8L II USM

SHOT OF THE DAY
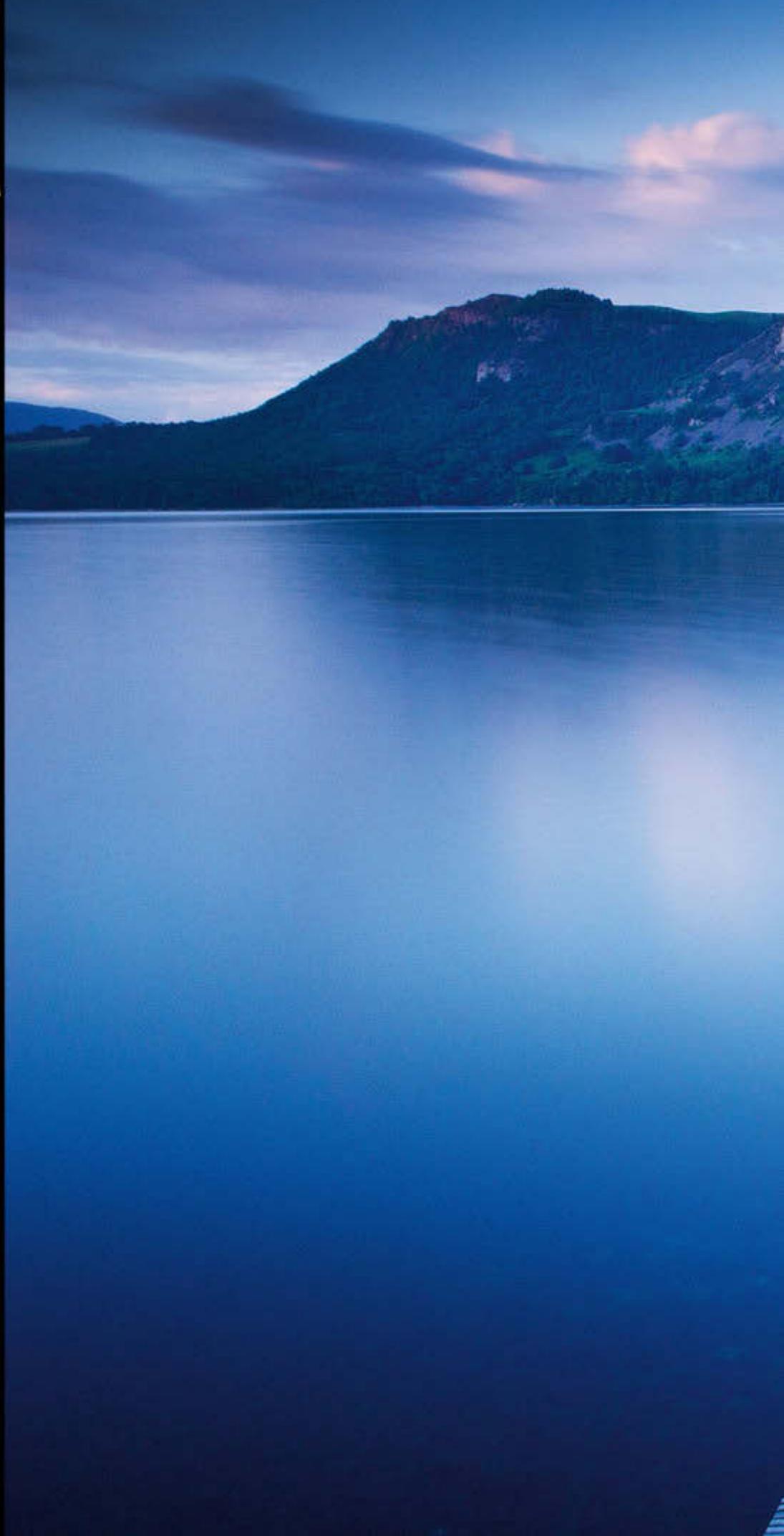
Mark's verdict

"Martin has captured a great shot, which demonstrates beautifully how glassy the water can become [1], and how to capture movement in clouds [2], when your shutter speed is measured in minutes rather than seconds. Martin's composition is excellent, with the jetty centrally placed [3] and the horizon on the top third line [4] for a balanced image. In keeping with the expertly taken shot, the image has been well processed, keeping the tones cool and blue [5]. Well done Martin!"

Martin's comment

"We waited until after 9pm for the sun to set behind us to capture this shot. By this time, as light levels had dropped, we could use Mark's 10-stop ND filter and, using Bulb mode, we timed an exposure of 150 secs (that's two-and-a-half minutes – we increased the ISO to 200 to get this exposure, otherwise each shot would've taken five minutes!) I manually focused the shot using Live View – this is especially helpful when you're using a dense filter, as you can't see through the darkened viewfinder. I'm so pleased with the result." ■

[2]

[5]

[4]

[1]

[3]

Essential SLR skills
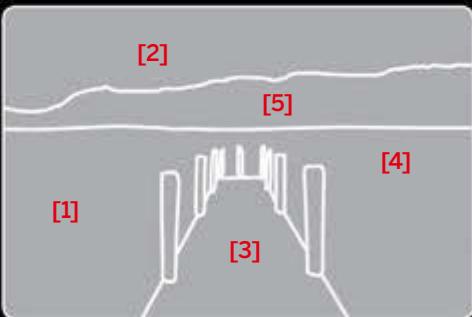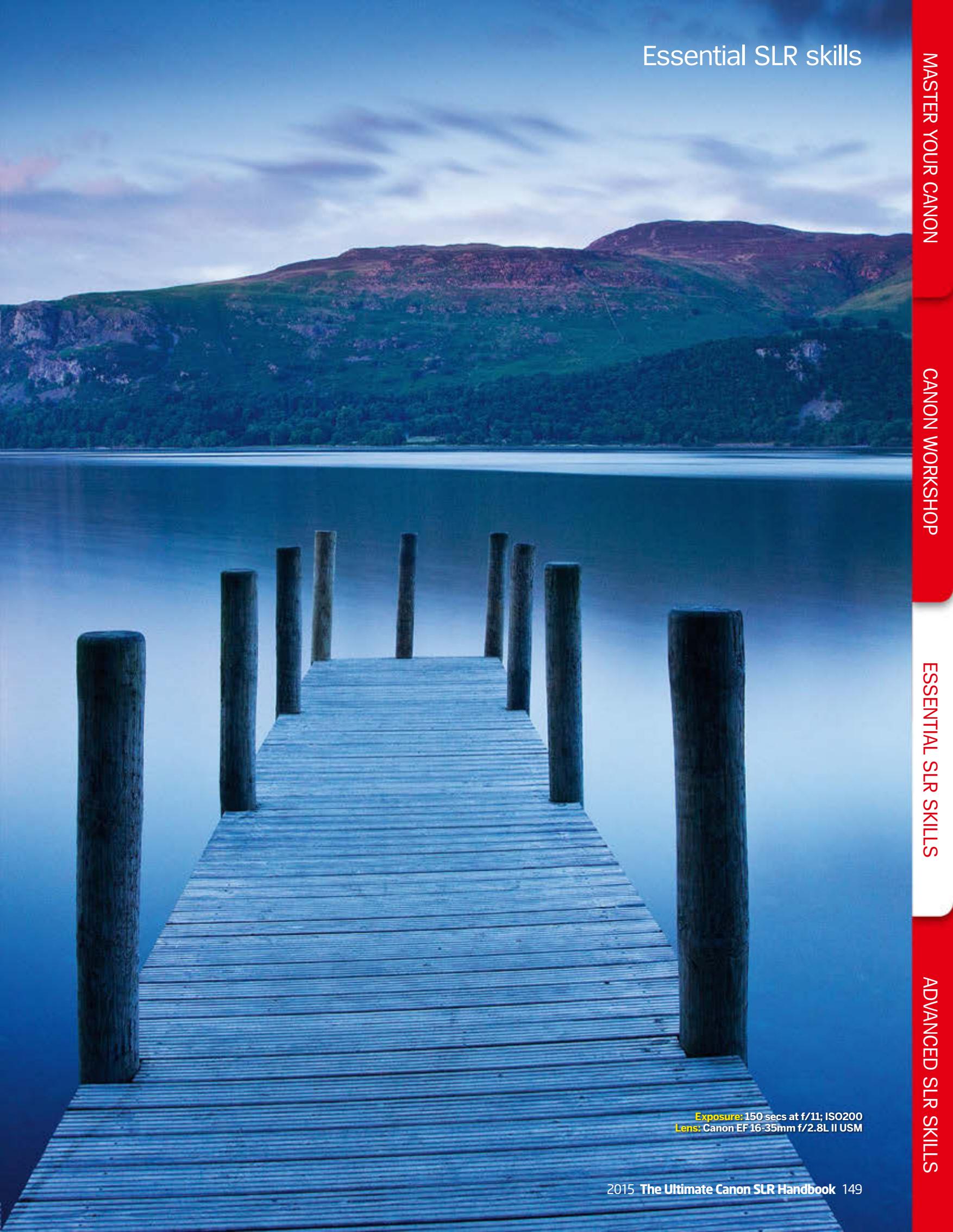
Exposure: 150 secs at f/11; ISO200
Lens: Canon EF 16-35mm f/2.8L II USM

LEARN HOW TO PHOTOGRAPH...

Candid family portraits

Discover how to take fantastic family portraits as our apprentice heads to Bournemouth to get top tuition from Canon portrait photographer Paul Smart
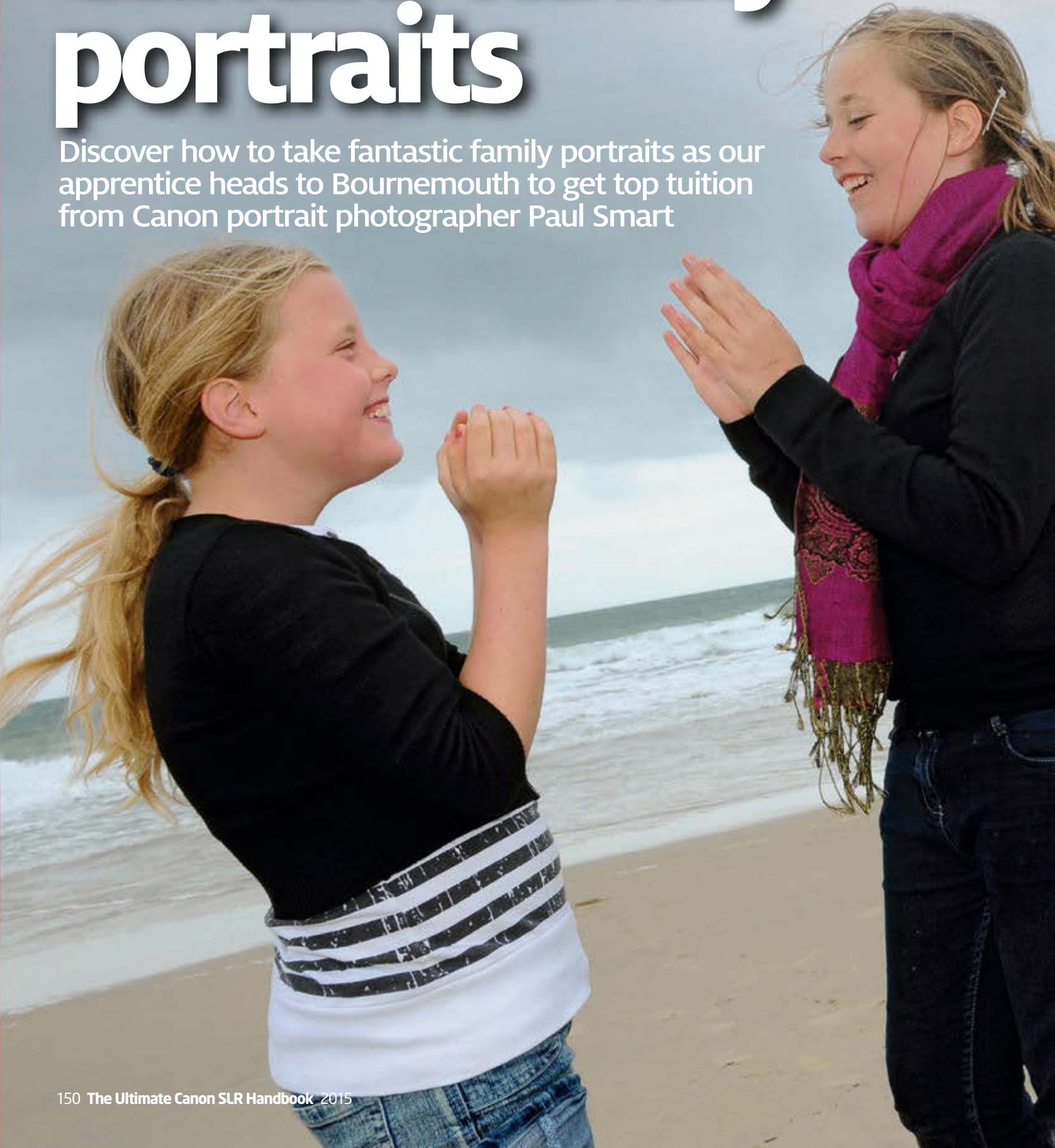
THE PRO...

Name: **Paul Smart**
Camera: **Canon EOS-1D Mark III**

Paul, 30, was born in Leicester and studied photography in Australia before settling in Devon. He works from his studio in Exeter and has been a successful family portrait specialist for five years. Check out his website at www.maxamphotography.com.

THE APPRENTICE...

Name: **Sarah Milne**
Camera: **Canon EOS 50D**

Sarah is a single mum and amateur photographer from Croydon. After buying her first Canon (an EOS 450D) 18 months ago, she enrolled on an Open College of the Arts photography course and has never looked back. Sarah's work has progressed (check out her project at www.giftsoflife.co.uk), but she wants advice on how to photograph her daughters. ▶

Paul uses Canon's pro-level EOS-1D Mark III D-SLR, with its 10 frames per second burst mode – ideal for capturing fast-moving children. He also uses the following photography gear:

Canon EF 16-35mm f/2.8L USM lens
Canon EF 24-70mm f/2.8L USM lens
Canon EF 70-200mm f/2.8L IS USM lens
Canon EF 50mm f/1.4 USM lens
2x Canon Speedlite 580EX II flashguns
MicroSync Digital wireless radio trigger to fire flashguns
5-in-1 reflector
Elinchrom studio lights

Is Sarah ready to shoot portraits?

After Sarah had warmed up and taken a few portraits of her two daughters, Paul noticed a few ways she could improve her technique...

RAW POWER

Switch to RAW image quality

"Sarah had her Canon EOS set up to capture just JPEGs," says Paul. "JPEGs are fine if you manage to get the shot perfect every time, but it's better to shoot in RAW as it's the highest image quality setting and gives you many more options to accurately enhance your shots in Adobe Camera Raw if they need a boost."

SEMI-AUTO TO MANUAL

Switch shooting modes

"Sarah was relying on Av (Aperture Priority) mode, but when shooting outdoor portraits in bright daylight, as we were in Bournemouth, it's common for cameras to underexpose shots," explains Paul. "I gave Sarah the confidence to shoot in Manual mode, to set her aperture and shutter speed, and to get the portraits she wanted."

KILLER KIT OF THE PROS #1

'Fast' lenses

"Most of my lenses are from Canon's L-series," says Paul. "They're expensive, but you get the best quality glass, build and accuracy, giving the best portraits. They're 'fast' lenses, so they have a constant aperture of either f/2.8 or f/4, meaning fast shutter speeds for sharp portraits, even in low light."

EXPERT INSIGHT

Stay focused on your subjects

When it came to focusing, Sarah was a little ahead of herself – attempting to manually focus with mixed results. Paul encouraged her to use her lens's autofocus (AF) mode to get consistently sharper shots. "I use AF when photographing children because they rarely keep still, so it's practically impossible to manually focus and ensure sharp shots," Paul explains.

PAUL'S TIP

Start shooting with a mid-range zoom

Paul likes to begin shooting portraits using his Canon EF 24-70mm f/2.8L USM lens. "The 24-70mm on my EOS-1D Mark III enables me to take wide shots of a family of four or five, then zoom in to take individual portraits," says Paul. "Depending on the sort of shot I'm trying to take, I'll then switch to a 16-35mm wide-angle or 70-200mm telephoto zoom as necessary."

HOT SHOT #1

◀ Sarah's comment

"This was a pleasing start for me. Paul talked about clean compositions and leading lines, which I've tried to put into effect in this shot of Hope and Ellie playing on the pier. I used an aperture of f/9 to keep the length of pier in focus and, shooting in manual, I dialled-in one stop of overexposure (using the Exposure Level indicator) to correctly expose the girls and make the sea and sky less prominent in the background." ▶

Exposure: 1/60 sec at f/9, ISO100
Lens: Canon EF 24-105mm f/4L IS USM

Essential SLR skills

KILLER KIT OF THE PROS #2
**Canon Speedlite flashguns**
"When shooting outdoor portraits, I often use my Canon 580EX II flashguns to brighten people up and lift them out of the scene, as well as to remove unwanted shadows on their faces when shooting in harsh sunlight," says Paul. "Flashguns are more powerful and responsive than on-camera flashes. For instance, when shooting indoors you can bounce the flash off ceilings or walls for a softer, more flattering effect."

KILLER KIT OF THE PROS #3
Reflector
An invaluable piece of kit for portraiture, a reflector is a cheap way of controlling and directing the light onto your subjects' faces to help capture well-lit portraits. "My reflector's got various coloured covers, including gold to warm up skin tones and silver to brighten up people's faces, plus a white cover for a softer reflected light," says Paul.

PAUL'S TIP
You get the point?
Paul got Sarah to switch from AF (autofocus) Auto Point Selection – which uses all nine AF points and focuses on whatever's closest – to Manual AF Point Selection. "Sarah started using the central AF point, then built up to using whichever AF point fell over her daughters' eyes as she was composing her shots."

HOT SHOT #2

Exposure: 1/200 sec at f/7.1, ISO100
Lens: Canon EF 24-105mm f/4L IS USM

◀ Sarah's comment
"Paul advised me to use my Speedlite 430EX II and some 'fill flash' to reduce the shadows and create better skin tones, while still retaining some detail in the bright sky. I used Manual mode and set the aperture to f/7.1 to blur the background, with a shutter speed of 1/200 sec to sync with the flash. I sat down on the beach to get down to her eye level and tilted the horizon to make the final portrait more dynamic, while still including the helter-skelter on the pier in the background as a point of interest. I later converted the shot to black and white."

EXPERT INSIGHT

Connect with your subjects

Building a rapport with people you're about to photograph is crucial. If you don't engage with them, your shots will look lifeless. "Normally I'll have an informal chat and a laugh with the kids and parents first, which helps people to relax before the photography begins," says Paul. "Sarah didn't have this problem as she was photographing her own daughters. However, this means a different approach is needed to get the shots, because quite often your children won't listen to you. I made sure Sarah gave the girls clear instructions – while maintaining an all-important sense of fun!"

Exposure: 1/60 sec at f/4, ISO100
Lens: Canon EF 24-105mm f/4L IS USM

HOT SHOT #3

▲ Sarah's comment

"We decided to get individual portraits of the girls, and this is my eldest daughter, Hope, posing against the colourful background of a beachfront building that had a lovely green, weathered exterior. As it was overcast, the natural light was soft and created no unsightly shadows. I chose a wide aperture and focused on Hope's eyes, using a tight composition to fill the frame."

SARAH'S TIP

◀ Change your angle of view

"Paul was very active when taking portraits and encouraged me to move around my subjects to capture more interesting angles of view," says Sarah. "I ended up standing on benches to shoot downwards, lying on my back on the pier to shoot upwards, and crawling around on the beach to get down to my daughters' eye level, all of which helped me capture more inventive shots." ▶

EXPERT INSIGHT

Capture some action

Once comfortable in front of the camera, one of the great bonuses of photographing children is that they love to show off and pose. The trick is to be ready to capture the action on camera. "Sarah was set with a wide aperture of f/2.8 and a resulting fast shutter speed of 1/500 sec, which meant a perfect exposure that froze any movement the girls made, such as Ellie splashing around in the stream (below)."

SARAH'S TIP

Play time!

"Kids can get bored quickly when you're trying to photograph them, so I encouraged my daughters to just play and enjoy themselves," says Sarah. "I simply stood back with my 70-200mm telephoto zoom lens and photographed whatever they were doing, just occasionally directing them – asking them to

KILLER KIT OF THE PROS #4

Wireless radio flash trigger

"This little MicroSync Digital device (£189, www. warehouseexpress.com) is great for remotely firing one or two of my flashguns without wires getting in the way or restricting where I can position the guns," says Paul. "This means I can put my flashguns on stands and light my subjects from both sides, or from in front and behind, for more dramatic portraits."

KILLER KIT OF THE PROS #5

Telephoto zoom

"I never go anywhere without my Canon EF 70-200mm f/2.8L IS lens," says Paul. "It's a brilliant portrait lens because at f/2.8, and over a 100mm focal length, I can blur any backgrounds to make people 'pop' out of the shot. Its 200mm focal length also enables me to stand back and give subjects space, meaning better facial expressions and portraits!"

HOT SHOT #4

Exposure: **1/320 sec at f/2.8, ISO100**
Lens: **Sigma 70-200mm f/2.8 EX DG Macro HSM II**
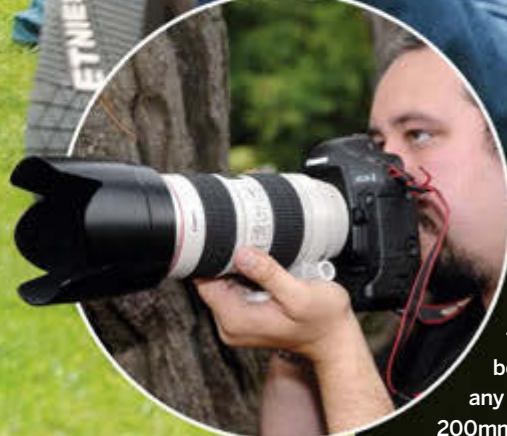
▲ Sarah's comment

"We walked to the nearby park for these portraits. We found a clearing where the dark greenery was far enough behind the girls so that, by using a wide aperture of f/2.8 and a long telephoto lens, we could knock it out of focus. I got down on my front to reduce the amount of foreground appearing in my frame and fired away on Continuous Shooting mode (6.3 frames per second) as the girls played around. I love the way Hope's cracking up as Ellie giggles while struggling to make a daisy chain."

Pro portraits

Our professional Canon photographer Paul Smart reveals a few of his favourite family shots…

Karate kid

1 "**Th**is boy was playing on the studio floor. His energy was fantastic and I really wanted to capture it. At f/16 and 1/200 sec, his kicking foot is blurred ever so slightly while the rest of his body stays sharp, helping to convey the energy of his random movements."

The eyes have it

2 "**Th**is portrait brings out the eyes of the little girl, without losing focus on her brother. It was shot with a three-light set-up in my studio, using the long end of a Canon EF 24-70mm f/2.8L lens. Shooting at f/5.6 ensured that both brother and sister remained in focus."

In the field

3 "**Sho**oting at f/5.6 at a focal length of 70mm gives this shot a pleasing, shallow depth of field. The lighting from the left draws attention to the boy's features, and I like the low-down composition with the light green foreground and darker background." ▶

Essential SLR skills


SHOT OF THE DAY

Paul's verdict

"Sarah really impressed me with her natural ability and eye for a shot. The composition is great [1]: Sarah got down low, shooting up towards the girls, so there's more clear sky than distracting foreground. By shooting with a vertical composition she's managed to fill the frame with the girls [2]. By underexposing by two stops Sarah has created a striking silhouette [3] – where you can still see the girls' outline against the moody sky – and has also managed to freeze the motion wonderfully as the girls play [4]."

Sarah's comments

"This is my most creative portrait of the girls. Although I do like the more traditionally exposed shot (see above), where you can clearly see the pier, the girls and their colourful jackets and shoes, I definitely prefer this beautiful silhouette as it has much more impact. I increased the contrast in Photoshop using Curves to make the blacks and whites punchier. Paul gave me confidence to try new things on the day and I'm really chuffed I was able to take such a winning family portrait." ■
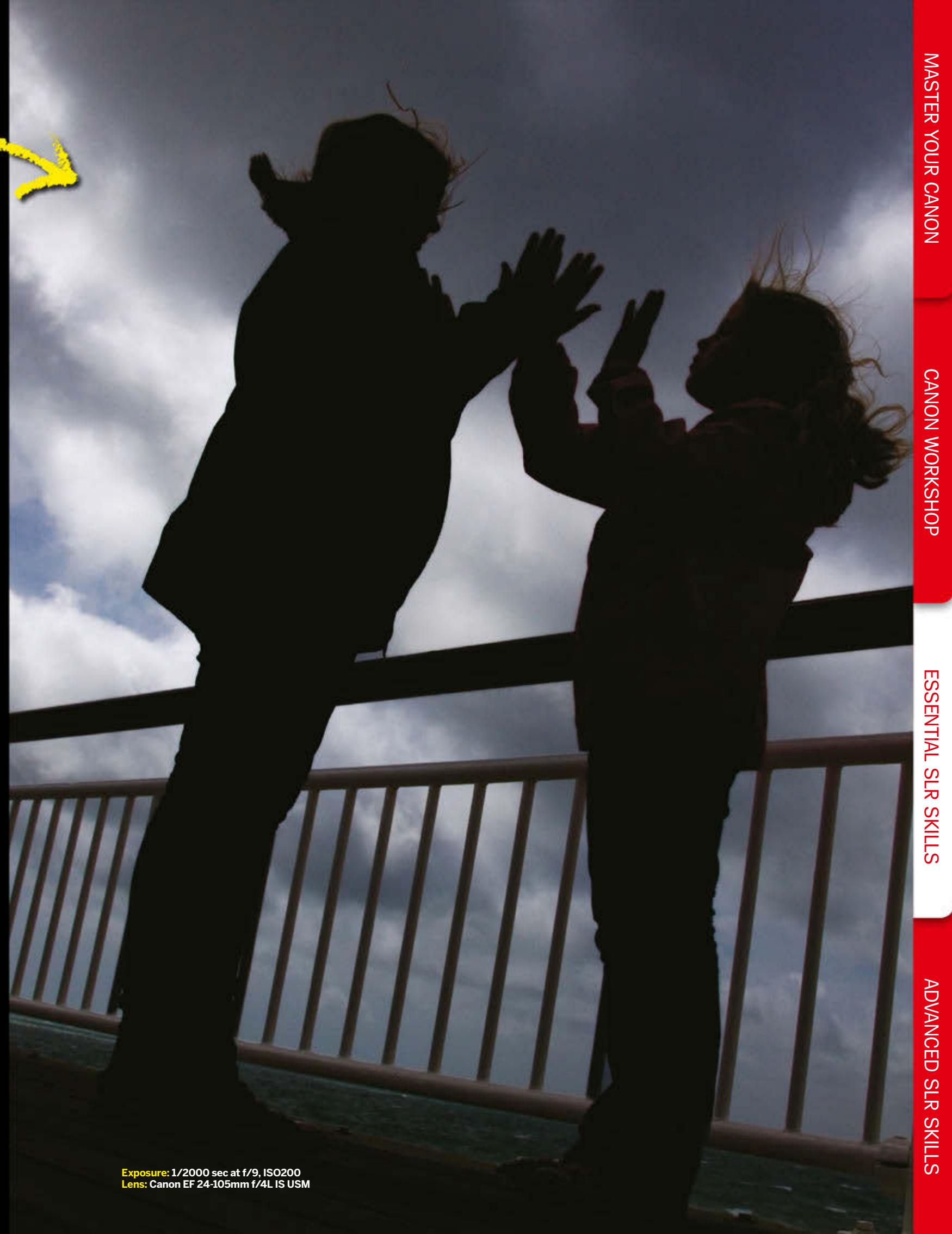
Exposure: 1/2000 sec at f/9, ISO200
Lens: Canon EF 24-105mm f/4L IS USM

Still-life scenes in the home

Discover how to capture exquisite interior still-life scenes as our apprentice gets top-notch tuition from lifestyle pro Max Attenborough

WORDS: PAUL GROGAN • LOCATION SHOTS: DAVE CAUDERY

THE PRO…

Name: **Max Attenborough**
Camera: **Canon EOS 5D**

Pro photographer Max trained as a fine-art painter before turning to photography. He went pro three years ago, and has built up an impressive client list that includes John Lewis and Waitrose. He specialises in still-life photography, and likes to work with natural light wherever possible. To see his work, check out www.maxattenborough.co.uk.

THE APPRENTICE…

Name: **Julie Stevens**
Camera: **Canon EOS 400D**

43-year-old Julie is an interior designer based in Kent. She has been interested in photography for as long as she can remember, and bought her EOS 400D when it came out three years ago. She confesses to using it like a point-and-shoot camera, and came to us for advice on how to shoot better lifestyle and interior shots for her work. ▶

Essential SLR skills

Is Julie set up for still life…?

Before Julie got started, Max cast his eye over her camera settings and made a few suggestions as to how she could take more control of her shots

Take more control

"Julie was shooting in Auto mode," says Max, "but being able to set your aperture manually is essential. With a tripod you don't have to worry about camera shake at slow shutter speeds, so you can set ISO to 100 for grain-free shots and then select an aperture based on how much depth of field you're after."

Shoot in RAW

"Julie's camera was set up to take medium-res JPEGS," explains Max, "but even high-res JPEGS don't offer sufficient detail. RAW files allow you to fine-tune exposure without introducing artefacts, and when you're having to balance lots of light sources, white balance is easier to adjust in RAW too."

HOT SHOT #1

Exposure: 0.4 sec at f/2.8, ISO100
Lens: Canon EF 100mm f/2.8 Macro USM

◀ Julie's comment

"From my work as an interior designer, I know that objects work best in groups of three or five rather than two or four, hence the three candles. Max encouraged me to set a very wide aperture to ensure a shallow depth of field, and he also advised me to crop in really close, to give a sense of the space beyond the frame. Finally, he suggested placing a small sheet of paper just out of frame to the right, to reflect some daylight from the window over on the left back into the scene. Overall, I'm pretty pleased with it for a first attempt!"

Take a test

"I always snap a few test shots without a tripod first," explains Max. "Once I'm happy, I'll get the composition roughly right and then fine-tune the arrangement of the objects. There's no point obsessing over an object's position until you can see how it looks through the viewfinder."

Sekonic light meter

"Using a light meter can save a lot of faffing around trying to get the exposure right in-camera," says Max. "By taking a reading of the light that's falling on the scene rather than the light that's reflected, you'll get a much more accurate exposure setting. I always expose for the ambient light only, with any lights in the scene switched off, and then turn the lights on to add interest, or use reflectors."

Focus manually

"Max encouraged me to switch my lens to manual. As well as giving me control over what to focus on, it also meant I wouldn't have to re-frame if I decided to focus on a detail that wasn't covered by one of the lens's AF points. He also showed me how to check it on-screen by zooming in and toggling around the shot."

Max uses the full-frame 5D, which enables him to capture wide-angle interiors even in very confined spaces. He also takes the following equipment with him on every shoot:

Canon EF 24-70mm f/2.8L USM lens
Canon EF 70-200mm f/2.8L IS USM lens
Canon EF 100mm f/2.8 Macro lens
Sekonic Flashmate L-308b light meter
Manfrotto MDeVe tripod with ball head
Manfrotto 329 RC4 three-way head
Canon TC-80N3 remote controller
Bowens 750 and 1500 monolights
Reflectors of various sizes
Gretag Macbeth colour chart
1TB portable hard disc drive

Look for props

"When you're shooting still life shots on location, have a good look around before you get started," says Max. "Go through the house room by room looking for interesting objects or groups of objects and come up with a potential shot list.

If possible, find out about the age and style of the property before you get there, and take a few suitable props along with you. I'm always on the lookout for interesting objects that I can use as props, and I take a selection on every shoot." ▶

Essential SLR skills

MAX'S TIP

Use aperture creatively

"I try to use aperture as a creative tool in its own right: f/2.8 enables me to focus the viewer's attention on a single detail, f/5.6 lets me show most of the subject but blurs the background, and f/8.0 enables me to soften the background. I tend not to go higher than about f/11, as most lenses are at their sharpest in the f/8-f/11 range. Any higher and the depth-of-field benefit is cancelled out by the loss of optical quality."

EXPERT INSIGHT

Flip the switch

"If you set your exposure for the ambient light, before any lights are switched on, if they're then switched on for the duration of the exposure to add interest – as with Hot Shot 2 on the right – you run the risk of badly blown-out highlights," explains Max. "Because shutter speeds are typically a second or more when you're shooting interiors, the way round this is to only turn the lights on for a split second during the exposure. This should be just long enough to add a subtle glow without altering the exposure or producing any blown-out highlights."

KILLER KIT OF THE PROS #2
Macbeth colour card

"Another challenge is getting the white balance right, especially if you're using multiple light sources," says Max. "The solution is to place a Gretag Macbeth colour chart in the scene and take a shot. The chart contains a calibrated white point, so you can use it to set the white point manually in Photoshop, and then apply the same white point to the version without the colour chart in it."

KILLER KIT OF THE PROS #3
White reflectors

"When it comes to interior and still-life shoots, reflectors are essential," says Max. "Most rooms only have windows on one side of the room, or two at the most, which makes for very mono-directional light, even in very brightly painted rooms, which tend to reflect light around a bit more. The result is strong shadows on the side of the object that's facing away from the window. By reflecting the light back into these shadows, you can soften the light and reveal detail at the same time."

JULIE'S TIP

It's all in the detail

"Initially I was keen to shoot quite wide, but Max explained that it's sometimes better to sum up the mood or feel of a place using a selection of carefully chosen objects or elements. He also encouraged me – as I encourage my clients – to keep an eye out for different textures, shapes and colours, and to combine them in a single image, as in Hot Shot 2."

Julie's comment ▶

"I wanted a shot of the sumptuous curtain and matching lamp, and included the harder-edged brass objects to add interest and detail. I set an aperture of f/8 to get good depth of field while softening the tassels and background slightly. As the alcove was quite dark, I had to use a large white reflector to bounce some light from the window on the left onto the back wall. Finally, because the energy-saving bulb in the lamp took a while to reach full brightness, I was able to turn it on just before I released the shutter without blowing out the highlights." ▶

HOT SHOT #2

Exposure: 2.5 secs at f/8, ISO100
Lens: Canon EF 70-200mm f/2.8L IS

Essential SLR skills

JULIE'S TIP

Bracket everything

"One of the big things that Max taught me was to bracket my shots. Even with the help of a light meter it was sometimes hard to tell whether we were getting the best exposure across the whole scene. Bracketing each exposure by a third and two-thirds of a stop either side of the 'correct' exposure gave us a range of exposures to choose from."

EXPERT INSIGHT

Get down low

"When you're shooting whole rooms, the temptation is to shoot from head height," cautions Max, "but, more often than not, getting slightly lower results in a more pleasing viewpoint. Everyone knows what a room looks like from eye level, so shooting from lower down offers a different perspective. Plus, if you keep your camera level and shoot the room from roughly halfway between the floor and the ceiling, you reduce the risk of converging verticals. These can be corrected in Photoshop later on, but this takes a fair bit of time and effort, so it's always best to get it right in-camera in the first place."

KILLER KIT OF THE PROS #4

Canon extension tubes

"These little gadgets are terrific for close-ups with extremely shallow depth of field. I often use my 70-200mm to crop right in, and then set an aperture of f/2.8 to ensure that only a fraction of the frame is in focus. Because it won't focus closer than a metre, though, this doesn't work for small objects. Canon's EF12 and EF25 extension tubes enable me to focus much closer in, while still keeping depth of field to a minimum."

MAX'S TIP

A touch of class

"When you're looking for objects or arrangements to photograph," advises Max, "think about using things that reflect the purpose of the room, such as soap in a bathroom. Adding a touch of luxury will also give your finished image a polished, classy feel, even if the items in question are never actually used! Handmade soap tied up with rattan is always going to look more appealing than a plain old bar of bath soap!"

▶ Julie's comment

"This was a tricky shot to get right because of all the reflections. In the end we had to use a large white reflector to block out the distracting dark background in the mirror. Because the depth of field is quite limited, you can't tell that it's actually a reflector in the background! We brought in the handmade soap from another bathroom to add a touch of luxury, and used the reflections of the bottles to create a more balanced composition."

"A few of my favorite things"

As a trained fine art painter, Max has an eye for detail and lighting, and enjoys still-life photography because of the control it gives him over both. Here are a few of his favourite still-life shots:

The Abstract

1 "I was really pleased with this image: it has a very homely feel and was thrown together very quickly, hence its abstract nature.
The colours really ping too, and the depth of field is deliciously narrow!"

A Sign of the Times

2 "This image was shot with a stylist in tow. I love the antique feel here that's simply been created with the right selection of props – most notably the vintage London bus sign that dominates the background of the shot."

The Old Master

3 "Once again, this shot was thrown together with the help of a stylist, and the exquisite composition on the tabletop and the quality of the light in the scene remind me of Vermeer's paintings (look them up for inspiration)." ▶

HOT SHOT #3

Exposure: 0.5 sec at f/5.6, ISO100
**Lens:** Canon EF 70-200mm f/2.8L IS USM

Exposure: 2.5 secs at f/5.6, ISO100
Lens: Canon EF 70-200mm f/2.8L IS USM

SHOT OF THE DAY

Max's verdict

"In some ways, this was the most straightforward shot of the day, as it didn't need any extra lights or reflectors, but that's what makes it so effective. Only the garlic and parts of the pepper are in focus, which adds to the soft, natural feel of the light, [1] and the combination of colours and textures, and the careful arrangement of the objects, make for a perfectly balanced composition [2]. The modelling created by the single light source [3] (in this case a kitchen window) adds a painterly quality that makes it look like an oil painting. All in all, a very fine still-life photograph!"
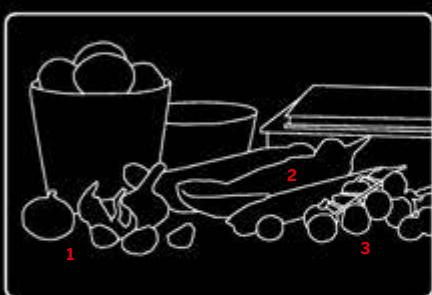
Julie's comment

"Everything just seemed to come together in this shot, even though the natural light was fading rapidly at this point! I cropped out the objects on the left to suggest a sense of space beyond the frame and used the ambient light from the window to produce the subtle modelling in the objects on the table.
I particularly like the combination of colours and textures, and the soft, natural feel of the light." ■

Essential SLR skills

LEARN HOW TO PHOTOGRAPH…

Safari park wildlife

WORDS CLAIRE GILLO
LOCATION PICTURES JESSE WILD

Our apprentice discovers how to photograph all creatures great and small as he goes on safari in Merseyside with wildlife pro David Southard

THE PRO...

Name: **David Southard**
Cameras: **Canon EOS-1D Mk IV,
Canon EOS-1Ds Mk III**

Wildlife photographer David Southard runs photography training outfit Wild Arena (www.wildarena.com) with his wife Janet. They are based at Knowsley Safari Park near Liverpool, from where the couple run workshops covering everything from big game in the park to reptiles and insects in their studio.

THE APPRENTICE...

Name: **Andy Thorpe**
Camera: **Canon EOS 550D**

Andy Thorpe, aged 48, from Bristol, is a part-time teacher and property manager. In his spare time Andy loves to get out and about with his Canon EOS 550D to capture birds and other British wildlife. Andy is always looking to improve his animal shots, and he jumped at the chance to spend a day 'on safari' with a professional wildlife photographer. ▶

KILLER KIT OF THE PROS #1
Telephoto lens

"On safari I like to take out my Canon EF 600mm f/4L IS II USM," says David. "The image quality is incredible." At over £10,000 this lens isn't an option for most people, and while Sigma's 500mm f/4.5 EX HSM is half the price at £4,800 this will still only appeal to professionals. A cheaper option is to use an extender to get extra reach. The Canon EF 2x III (£430) doubles the focal length of your lens, at a cost of reducing the aperture by two stops.

Setting up your camera for safari...

Andy wasn't the top cat when it came to his shooting techniques, so David showed him a few tricks

Raw vs JPEG

"Don't shoot in Raw unless you're prepared to process the files," David says. "You have to decide if you want to process your own images, or if you're happy for your camera to do the job using the large JPEG format setting. To draw an analogy, shooting Raw files is like cooking your own meal from fresh ingredients. If you know how to cook you'll eat a great meal. But if you can't cook then buy a ready meal! If you do decide to shoot only in JPEG format, record files at the largest size possible and set the WB to Daylight. Also set the Picture Style to Landscape for more vibrant colours in your JPEGs."

Av mode

"Switch your D-SLR to Av (Aperture Priority) mode, and set the aperture to the widest setting possible," says David. "This will enable you to blur backgrounds while keeping subjects sharp. You want to keep an eye on the shutter speed though – as a rough guide you want the shutter speed to be equal to the focal length you're shooting at. For example, if you're at 400mm keep the shutter speed at 1/400 sec or faster. You need to balance the light using the ISO, so if the shutter speed falls too low turn the ISO up. Remember to turn it back down if the lighting conditions change."

DAVID'S TIP

Exposure compensation

"Although your camera for the most part meters scenes correctly, there are times when it can't handle the bright conditions and you'll need to help it," David explains. "You have to deal with compensating between the different exposure values of the shadows and highlights in the scene. To get around this use the exposure compensation setting on your D-SLR. You'll often want to turn it down by one or two stops, depending on the lighting. It's crucial to avoid overexposing a scene, so keep checking your histogram as you shoot – you don't want the graph to peak and be cut off at the right edge."

HOT SHOT #1

Exposure: 1/200 sec at f/7.1; ISO400
Lens: Canon EF 100-400mm f/4.5-5.6L IS USM

KILLER KIT OF THE PROS #2
Beanbag

To provide some extra support, David carries a beanbag that he uses to support his telephoto lens as he shoots. "You can set up your beanbag on a post or on the windows of a truck," David explains. "They're light and easy to transport, and when it's not possible to use a tripod they're a great aid for keeping the camera steady. It's also a lot quicker to throw down a beanbag than to set up a tripod."

▲ Andy's comment

"To avoid including distracting background elements, such as fences and posts, David advised me to come in close with my composition," Andy says. "David explained that you need to decide how you want to photograph the animal in an enclosed environment. It makes for a better image if you can avoid showing that the animal is in captivity. Here, the two lions are interacting, making a pleasing shot. These moments were fleeting, and I needed to work fast to get the shots." ▶

Essential SLR skills

HOT SHOT #2

Exposure: 1/250 sec at f/7.1; ISO200
Lens: Canon EF 100-400mm f/4.5-5.6L IS USM

▲ Andy's comment

"This shot was taken in the early afternoon with the light filtering in from the side," Andy says. "The wide aperture pleasingly blurs the background, and the soft light has produced a halo effect around the antelope. There were no distracting elements surrounding the antelope, so David advised me to come out, and leave some space in my composition. I purposely left some space in the direction the antelope is looking, and composed the shot using the rule of thirds."

David carries two Canon D-SLRs in his bag, plus a selection of lenses:

Canon EOS-1D Mk IV

Canon EOS-1Ds Mk III

Canon EF 70-200mm f/4L IS USM

Canon EF 70-200mm f/2.8L USM

Canon EF 100-400mm f/4.5-5.6L IS USM

Canon EF 600mm f/4L IS II USM

Canon EF 500mm f/4L IS II USM

Canon EF 100mm f/2.8L Macro IS USM

Canon MP-E 65mm f/2.8 1-5x Macro Photo

EXPERT INSIGHT

Keeping it sharp

"When you're photographing animals you need to be quick," David says. "Switch your lens to the AF setting, and if you're not using a tripod make sure the Image Stabilisation is switched on, as this will help to eliminate lens shake. Use the middle AF point on your D-SLR to focus, as this will get you the most accurate results. For the majority of time keep the AF point locked on the eye of the animal; just as when you're shooting portraits of people, these are the most important features to get in focus."

Creature keepers

David tells us about three of his favourite wildlife shots

Lion

1 "We talked on the day about framing subjects tightly to create impact, and this is a good example. It also has the advantage of excluding any distracting elements in the scene."
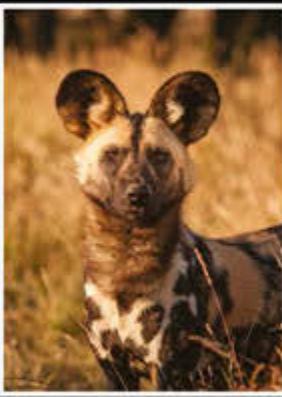
Hunting dog

2 "Sometimes you get lucky, and everything you hoped for just comes together for a picture. In this case I had a beautiful animal striking a good pose in long grass in the evening light."

Katydid (cricket)

3 "This image shows the magnification you can achieve with the Canon MP-E 65mm f/2.8 1-5x Macro lens. The katydid's head is about 4mm, so the reproduction ratio is greater than life-size."

Animal behavior

"To take great shots you need to understand the habits of the animal you're photographing," David says. "There are many things that will affect animals' behaviour, such as the weather, the time of day and if they're being fed. If you visit a safari park or zoo, ask the keepers in charge when's the best time to photograph a particular animal. You also have to work around the ambient light and find nice clean backdrops, so you'll need patience and persistence to get good results."

KILLER KIT OF THE PROS #3

Tripod

When you're shooting with a telephoto lens you'll need a tripod if you don't want to be limited to very fast shutter speeds. David has a range of tripods for different scenarios but his preferred choice is the Gitzo GT5541LS. The tripod can go right down to the ground, and the head can be easily rotated for maximum flexibility. ▶

Essential SLR skills

HOT SHOT #3

Exposure: 1/200 sec at f/18; ISO200
Lens: Canon EF 100mm f/2.8L Macro IS USM

▲ Andy's comment

"For the second part of the day we came indoors to spend some time in the studio, and this was a great opportunity to get really close to some amazing creatures using a macro lens setup. A lot of the same rules applied in this environment as on the safari; backgrounds are still very important, and the focus needs to be on the eye. We used a green backdrop for the first part of the shoot, which creates a natural environment for the gargoyle gecko. He stayed very still, so he was a great starting subject!"

ANDY'S TIP

Macro made easy

"When we were shooting in the studio, David advised me to switch my camera to Manual mode. We were shooting using a simple setup of two lights. I set the shutter speed to 1/200 sec to sync with the flashlight, and set the ISO to 200; the aperture varied between f/16 and f/18. I had to be spot on with my focusing, so I kept the camera set to Auto Focus."

KILLER KIT OF THE PROS #4

Water spray

"I always have water to hand to spray creatures with," says David. "Water drops on the skin look really good through the macro lens, and they also stimulate behaviour – the gecko will use its tongue to lick its eyes to dry them off, which can make for some great images."

▶ Andy's comment

"To get the best images of this green praying mantis, David told me to look for the interesting shapes that it makes with its body. Including the corner of the orange plant really brightens up the scene, and it also puts the bug into some sort of context and provides a sense of scale. Again, the eyes of this strange-looking creature were the key to a successful shot, so I had to get the focus on them just right."

HOT SHOT #4

Exposure: 1/200 sec at f/29; ISO200
Lens: Canon EF 100mm f/2.8L Macro IS USM

KILLER KIT OF THE PROS #5

Macro lens

A dedicated 100mm macro lens will enable you to focus closer and capture a life-size 1:1 image of even the smallest of God's creatures. The Canon EF 100mm f/2.8 Macro USM (non L-series/IS version) is a great lens at a great price; approx £429 if you hunt online (go to www.camerapricebuster.com).

DAVID'S TIP

Safety first

"Obviously the animal's health and well-being come first," says David. "The creatures we were shooting don't mind the flash light, but they can only pose for a limited time – around 15 minutes – before becoming agitated. You should also ensure that your backdrop is fully secured, so there's no way they can escape – small creatures can quickly disappear through the tiniest gaps, and it can be very difficult to find them again!" ▶

Essential SLR skills

SHOT OF THE DAY

David's verdict

"This chameleon wasn't the easiest subject as he was very lively, so Andy did well to get this shot. By getting in close and keeping the focus on the eye [1] he's captured a winning shot. The background [2] complements the bright patterns [3] of the scales, and the side profile [4] shows of the lizard's outline to great effect.
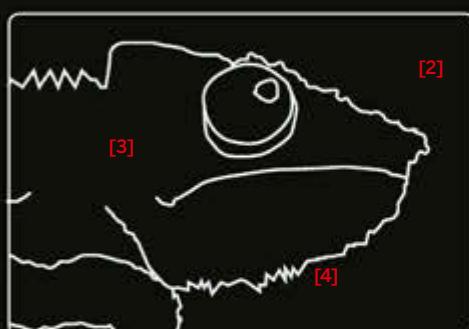
Andy's comment

"I was especially pleased with this shot of a panther chameleon, which was posing on a branch held by David. I kept the AF point locked onto his eye so it would be sharp, and the two lights and black backdrop really made the colours stand out."

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CANON WORKSHOP

ESSENTIAL SLR SKILLS

ADVANCED SLR SKILLS

100th ISSUE PREVIEW

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THE CANON MAGAZINE

THE BEST-EVER GUIDE TO
CANON
PHOTOGRAPHY

Canon

EOS 760D

CANON ZOOM LENS EF-S 18-55mm 1:3.5-5.6 IS STM

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148 PAGES OF EOS ADVICE IN EVERY ISSUE!

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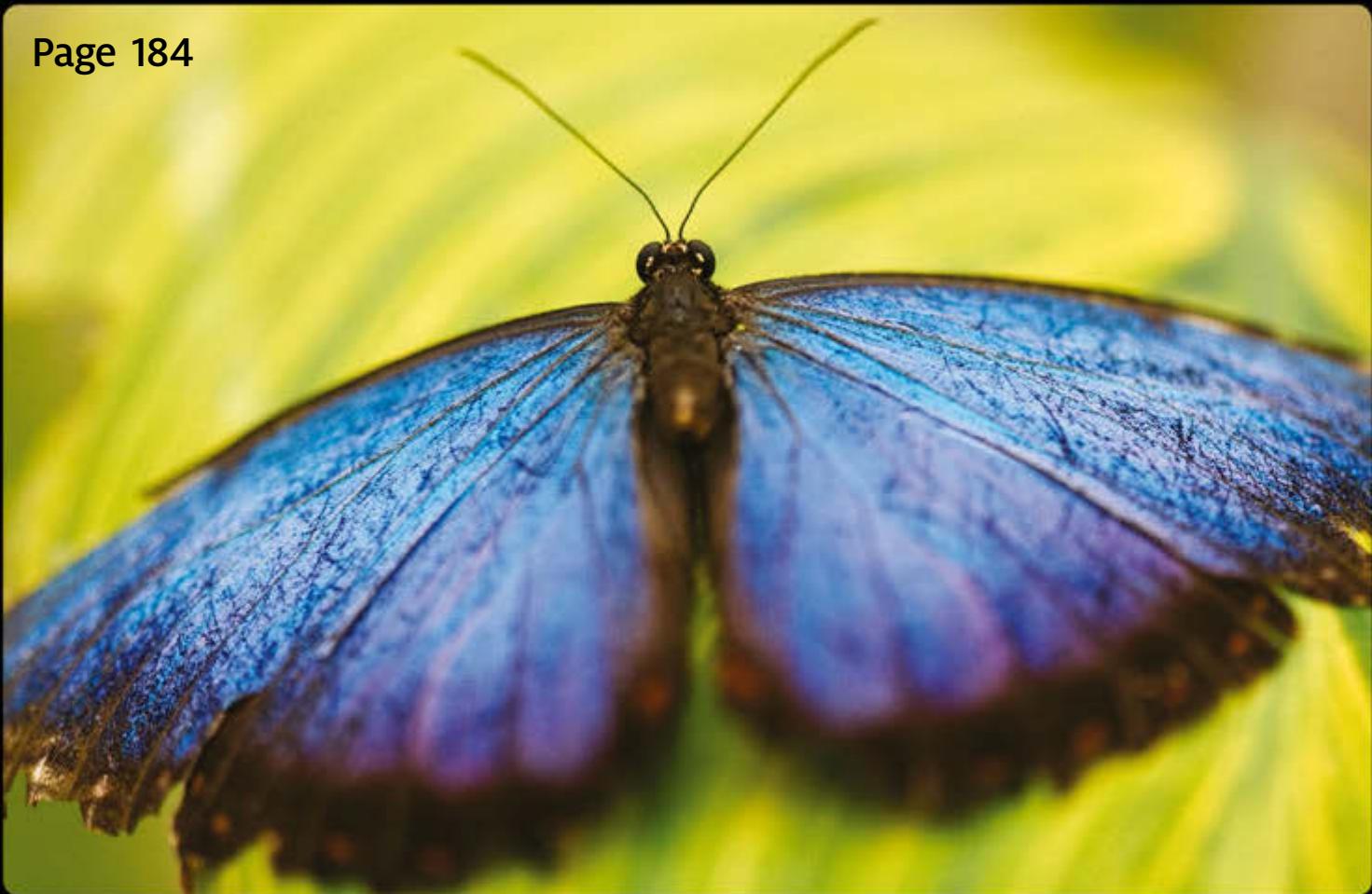
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Advanced SLR skills

4

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MASTER YOUR CANON

CANON WORKSHOP

ESSENTIAL SLR SKILLS

ADVANCED SLR SKILLS

THE PRO...

Name: **David Maitland**
Camera: **Canon EOS-1Ds Mark II**

David Maitland only turned full-time in 2006, but he's already a prolific nature photographer and has won countless awards for his original images of reptiles and insects, including several Wildlife Photographer of the Year awards. David now lives in Wiltshire. See his picturesque portfolio at www.david maitland.com.

LEARN HOW TO PHOTOGRAPH...

Close-up nature scenes

WORDS: PETER TRAVERS
LOCATION SHOTS: JAMES CHEADLE

With the help of award-winning nature photographer David Maitland, see how our apprentice discovers the best ways to capture stunning macro shots

THE APPRENTICE...

Name: **Alex Brown**
Camera: **Canon EOS 400D**

20-year-old Alex is currently studying sports science at Southampton University and is a keen amateur Canon photographer. Alex's passion lies in macro photography – "I like the unique and interesting view of photographing nature close-up," he says – but he's asked us for help to improve his mixed results. ▶

Advanced SLR skills

KILLER KIT OF THE PROS #1

Macro telephoto lens

"I never go on any nature shoots without my trusty Canon EF 180mm f/3.5L Macro lens," says David. "The magnification is amazing for close compositions and it's got a wide aperture of f/3.5 for very shallow depth of field. Its 180mm focal length allows me to stand further away from my subjects – so I don't scare them off – but still compose my shots so I get incredible close-up detail."

ALEX'S TIP

Set your alarm

"Get there early. Even though Studley Grange butterfly house doesn't open to the general public until 10am, we agreed with the manager to arrive at 9am," says Alex. "This means you can photograph the butterflies when they're not warmed up enough to fly – so they sit still, making it easier to get great photos. There are also fewer people to get in front of or behind the insects."

Is Alex ready to take close-ups?

After Alex had taken several practice shots using his own camera settings, David suggested a few ways to help improve his images…

ALWAYS CHOOSE RAW

Quality   3888x2592

L   L
M   M
S   S
RAW+L   RAW

TURN DOWN THE NOISE

ISO speed

100	800
200	1600
400	
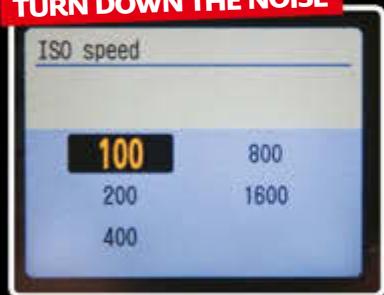
Maximise quality

"I always shoot in the RAW format," says David. "JPEGs can lack detail and tone compared to RAW files, which provide the highest image quality and therefore greater scope if I need to boost the colours when processing my shots in Photoshop."

Minimise artefacts

"With macro photography, the slightest noise becomes much more noticeable. I keep ISO at 50 or 100 (with a maximum of 200) and use a monopod or brace myself against trees to keep the camera still when shooting at slow shutter speeds."

David relies on top Canon gear when photographing nature in far-flung locations. He uses full-frame Canon EOS-1Ds Mark II and 5D Mark II bodies along with the following lenses and kit:

Canon MP-E 65mm f/2.8 1-5x Macro
Canon EF 100mm f/2.8 Macro USM
Canon EF 180mm f/3.5L Macro USM
Canon EF 70-200mm f/2.8L IS USM
Canon EF 16-35mm f/2.8L USM
Manfrotto carbon monopod and RC234 head
Three Canon Speedlite 580EX II flashguns
Canon Speedlite Transmitter ST-E2

EXPERT INSIGHT

Don't forget the background

Our pro, David, was keen to stress the importance of choosing the right background when composing his nature shots. "Many beginners just focus on the wildlife and don't pay attention to what's behind their subjects," he says. "The choice of background is actually crucial and can make or break a shot. I always pick a clean background, not necessarily with the most colour, but always with the least distracting elements. I quietly scout around subjects to work out the best background before I get into position and start taking photos."

Exposure: 1/200 sec at f/2.8, ISO200
Lens: Canon EF 100mm f/2.8 Macro USM

HOT SHOT #1

◄ Alex's comment

"To begin with, David got me to take the 'easy' classic butterfly shot (of a Papilio demoleus). I was looking straight on at the butterfly and focused on its hairy body – which is also on the same plain as its wings – so the entire butterfly was acceptably sharp. Using my EF 100mm Macro lens at its widest aperture of f/2.8 I was able to blur all of the background greenery and the branch trailing off into the corner. By tilting the butterfly slightly in-camera the image is given a more creative feel." ►

Know your nature!

David, a qualified biologist, is passionate about the natural world. "It really helps if you're genuinely enthusiastic about your subject matter, because it shows in your photographs," he says. "Knowing your Morpho peleides from your Papilio polymnestors will also help you to quickly pick the more interesting insects to watch and shoot."

KILLER KIT OF THE PROS #2
Canon Speedlite flashguns

"Flashguns are essential kit for macro shots," says David. "They're especially useful when shooting in near-dark jungles where hardly any light gets through the canopy to reach the forest floor – where all the interesting insects and reptiles hide. I regularly use two Speedlite flashguns together, both triggered remotely with my Speedlite Transmitter ST-E2, to light up subjects from behind and in front. Flashguns also maximise your chances of capturing sharp shots."

KILLER KIT OF THE PROS #3

Manfrotto monopod

"I use a monopod for four reasons," says David. "First, it enables me to get sharp shots using slower shutter speeds. Second, I can keep the ISO at 100 to maintain the best quality images and third, it takes the weight of my heavy EOS-1Ds camera and telephoto zoom lens. Finally, it doubles as a walking stick when I'm trekking up steep trails!"

EXPERT INSIGHT
Stay focused

Learning how to focus when using a macro lens can be tricky, but David passed on some expert advice. "I got Alex to switch to Manual AF point selection and choose the AF point closest to his subject's head or eyes. This also encouraged Alex to apply the 'rule of thirds' to position a subject in the top third of his shots."

AF point selection

Manual AF point selection

David's macro magic

Canon pro David shares a few of his favourite natural world subjects and their destinations

▶ Morelet's Tree Frog and Cat-eyed Snake

"Photographed in Belize, this is a critically endangered Morelet's Tree Frog (Agalychnis moreletii) battling for its life with a Cat-eyed Snake – they're locked in a stalemate. I stayed taking different angles of shots for over three hours."

◀ Large Red Damselfly

"This is a Large Red Damselfly (Pyrrhosoma nymphula), which I shot in a local meadow in Wiltshire. I wanted to get a nice Damselfly face showing the two false pupils in its eyes. I waited for one to perch and made sure only the front surfaces of its eyes were in focus."

▶ Queen Wasp

"This Common Queen Wasp (Vespula vulgaris) was shot in my back garden! It's reacting to my movement by threatening me with its gaping jaws. This is what really sets this shot apart, together with the colours and the catch-lights nicely positioned in the wasp's eyes. I used an EF 65mm Macro lens at f/11 and flashes behind and in front of the wasp."

HOT SHOT #2

Exposure: 1/250 sec at f/3.5, ISO200
Lens: Canon EF 180mm f/3.5L Macro USM

▶ Alex's comment

"David got me to shoot in Av (Aperture Priority) mode so I could chose a wide aperture to control the shallow depth of field. This Morpho peleides butterfly was warming up its wings, so we were fortunate enough to photograph the brilliant blue colouring. I was gaining confidence, so I got down low and focused on its head, positioning it in the top third of the frame and making sure the green leaf made up most of the background. As I was shooting at an angle and using f/3.5, part of the wings and the leaf are nicely out of focus." ▶

Advanced SLR skills

The devil is in the detail

Macro can open up a whole new range of photographic opportunities. Try focusing on the patterns of butterfly wings for startling results. All shots shown here were taken with flashguns remotely triggered at an exposure of 1/200 sec at f/11, ISO100.

"Fill the frame and use markings and veins as leading lines to draw the eyes into the shot," says David. "As it's a flat surface, use a medium aperture of f/11 to capture all the detail. Using a remote flashgun to light the source from the side will reveal more colour, texture and shadow."

DAVID'S TIP

Patience is a virtue

As well as explaining to Alex that you need to be physically fit and aware of the dangers when attempting deep forest treks in search of wildlife, David emphasised the need for patience: "You may need to sit for hours in the same spot, waiting. I actually love the calm of a forest and I'm quite content to sit on a damp, muddy floor with the bugs, waiting for an elusive insect to come out to play."
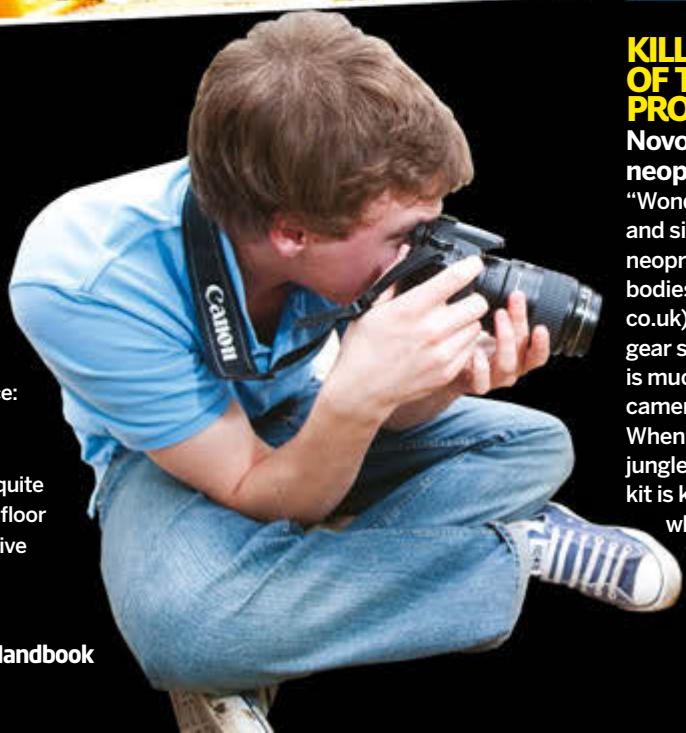
KILLER KIT OF THE PROS #4

Novoflex neoprene

"Wonderfully cheap and simple, I use these neoprene wraps to protect my camera bodies and lenses (£7, www.speedgraphic. co.uk)," says David. "I can then slot all my gear safely into my compact backpack, which is much lighter and less bulky than a rigid camera backpack full of protective padding. When I'm going on week-long treks in the jungles of Borneo, for instance, lightweight kit is key. I always travel as light as I can, which is why I sometimes favour my lighter EOS 5D Mark II instead of the rather hefty EOS-1Ds."

ON YOUR DOORSTEP

We photographed butterflies, bugs and snakes at Studley Grange's Butterfly World (www.studleygrange.co.uk) near Swindon – proof that you don't need to trek to the Amazon to get exotic nature shots.

ALEX'S TIP

Beep beep!

"Turn your camera's beep alert off in the menu before you start shooting," says Alex. "This way the beep going off as you achieve focus won't scare off any bugs before you even fire the shutter!"

HOT SHOT #3

Exposure: **1/40 sec at f/4, ISO100**
Lens: **Canon EF 100mm f/2.8 Macro USM**

◄ **Alex's comment**

"I loved photographing this charismatic Trans-Pecos Rat Snake. The keeper draped him over a tall Banana Palm plant, enabling us to get down to his eye-level. I focused on his inquisitive eyes – I learned that the eyes are the most important part of nature photos – and used an aperture of f/4 to push his body out of focus. He was constantly slithering around, so I used Continuous Drive mode to take multiple shots, increasing my chances of sharp photos. I cropped the image in Photoshop afterwards to lose some background." ►

Exposure: 1/50 sec at f/2.8, ISO200
**Lens:** Canon EF 100mm f/2.8 Macro USM
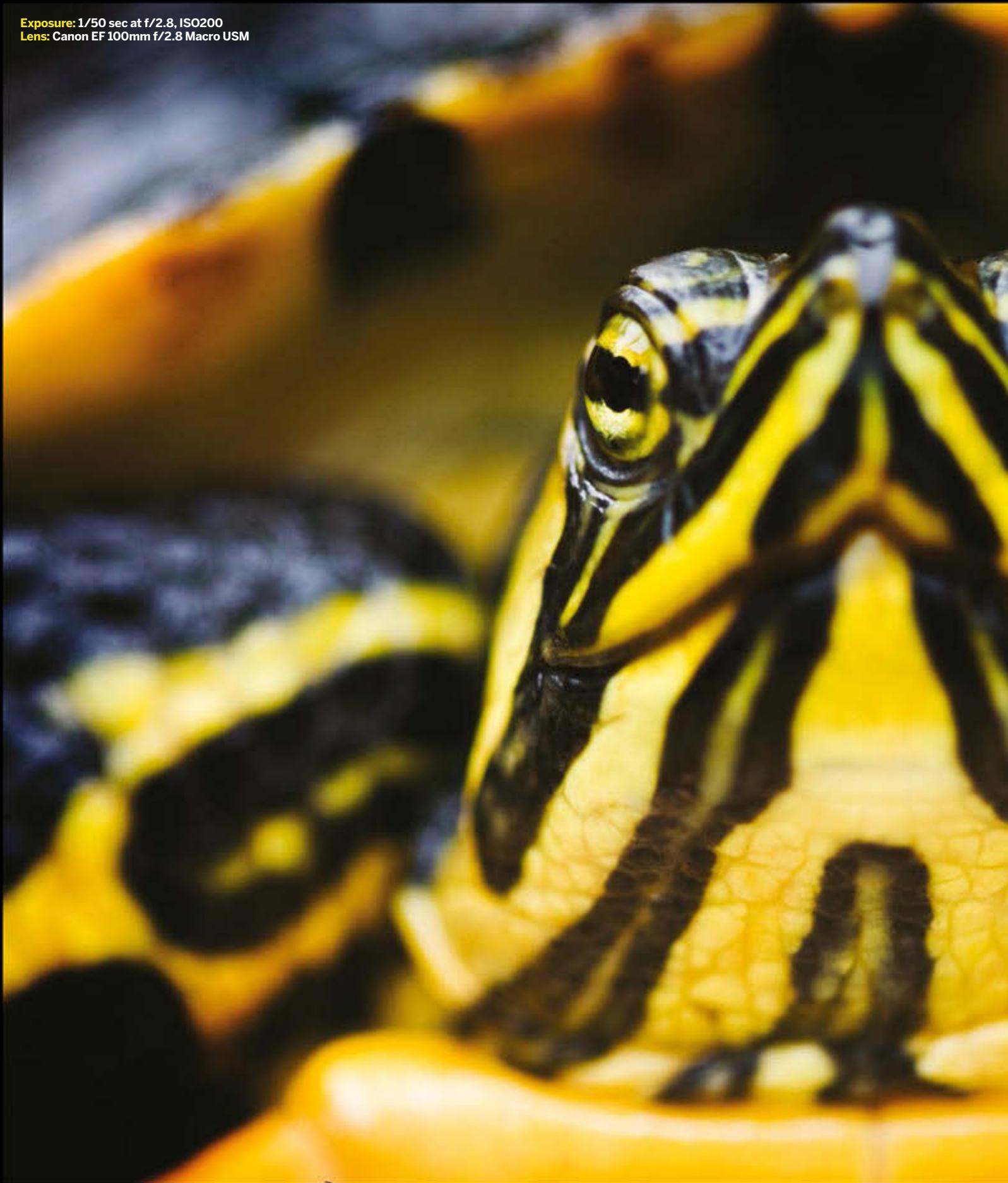
SHOT OF THE DAY

David's verdict

"Alex's tight composition means the shot is a dazzling mixture of the black and yellow colouring of the Yellow Bellied Terrapin [1]. His focusing is bang on and he's done well to focus on those beady little eyes [2]. By using a wide aperture of f/2.8, Alex has ensured the eyes are pin-sharp, with the legs and shell blurred behind [3]. There's a lovely symmetry to this shot, with the terrapin's nose central in the frame [4]."
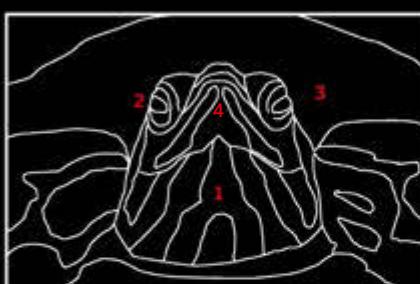
Alex's comment

"Using my Canon EF 100mm Macro lens at f/2.8, I sat on the floor to get down to the Yellow Bellied Terrapin's eye level as he perched on a rock near the pond. I'd tried lots of compositions and with many other shots my focusing was slightly off, so the nose was in focus but not the eyes. I feel I've captured the reptile's character. It's almost as if he's looking down his nose at us!" ■

THE APPRENTICE...

Name: **Cavan Scott**
Camera: **Canon EOS 450D**

Cavan Scott is 38-year-old freelance writer, editor and producer from Bristol. He's a big fan of the great outdoors and nature. He bought his Canon camera to photograph the wildlife and birds he spots when walking in the countryside with his family. A self-confessed 'bird brain' when it comes to camera technology, he asked for our assistance to improve his avian images.

LEARN HOW TO PHOTOGRAPH...

Birds in their natural habitat

Discover how to shoot birds like an expert as award-winning wildlife Canon pro Ben Hall heads to the Slimbridge Wetlands Centre to help our apprentice earn his wings

WORDS PETER TRAVERS LOCATION PICTURES JAMES CHEADLE

THE PRO...

Name: **Ben Hall**
Camera: **Canon EOS-1D Mk IV**

Ben is an award-winning professional wildlife photographer from Stockport. He's been pro since 2003 and has won several British Wildlife Photography awards. He runs regular wildlife photo workshops for groups and one-to-ones around the UK. Visit www.benhallphotography.com to see Ben's stunning portfolio. ▶

Advanced SLR skills

KILLER KIT OF THE PROS #1
Tele prime lenses

To get close to easily scared birds you'll want a telephoto lens to fill the frame with your feathered subjects. Ben uses Canon's pro L-series EF 500mm f/4L IS USM telephoto prime lens (the Mk II is around £8,500!) with his EOS-1D Mk IV. But you don't need the most expensive lenses to get top shots. Canon has a range of more affordable and lighter (so easier to shoot handheld without needing a monopod or tripod) L-series lenses suited to smaller EOS camera bodies such as Cavan's 450D, the 7D and 60D. These include the EF 300mm f/4L IS USM (£1,150), EF 400mm f/5.6L (£1,100) and the EF 100-400mm f/4.5-5.6L IS USM (£1,100) tele zoom (which Ben also uses).

BEN'S TIP
Bird spotting

"I travel around the globe to photograph all sorts of birds and wildlife, but for our apprentice photoshoot we went to the Slimbridge Wetlands & Wildlife Trust (WWT) centre in Gloucestershire. There are nine WWT centres across the UK and they're great locations with a variety of species and big hides ideal for any keen bird photographer. Go to www.wwt.org.uk to find your local centre," advises Ben.

Does Cavan have an eye for the birds?

After popping off a few test shots, Ben offered Cavan a couple of settings suggestions to help improve his images...

Tv Mode

"When photographing birds, your shutter speed selection is key, so I advised Cavan to break out of auto mode and to use the semi-auto Tv (Time value – aka Shutter Priority) mode," says Ben.

"You set your shutter speed while your camera automatically sets an aperture for a standard exposure. Start off at around 1/500 sec to freeze the birds in motion."

Manual ISO

"Cavan had been relying on the Auto ISO setting on his Canon D-SLR, but this proved quite erratic and didn't always set the best ISO for the shot. I got Cav to manually set his ISO for each shot. Your settings will depend on the light levels, but on the cloudy day were we shooting in, we regularly had our ISO at 800 (from ISO100 to increase the EOS sensor's sensitivity to light) for a good exposure," says Ben.

CAVAN'S TIP

Careful composition

"Ben explained that timing and patience are key when photographing birds, and emphasised the importance of your position and background behind the birds," reveals Cavan. "He told me to position myself so the background behind my chosen bird contrasts or complements the subject, and then wait until other birds or distractions have moved away before grabbing my shot."

BEN'S TIP

Don't shoot too wide!

"Many bird photography beginners try to capture the whole scene before them. Focus on individual flocks in a scene instead for a neater shot," advises Ben, "otherwise the eye will be left to wander awkwardly around the frame with no clear focal point to fix on to."

▼ Cavan's comment

"I bagged this shot from inside one of the big man-made hides at Slimbridge. I had to stand to shoot down from the window opening, and from this angle I've managed to make the most of the shelduck's reflection. In Tv mode, I set a fast shutter speed of 1/640 sec and, on Ben's advice, set ISO to 800, obtaining a wide aperture of f/5.6 to blur the background water. There was soft, low morning light, diffused by clouds, so I've avoided harsh highlights on the plumage." ▶

Exposure: 1/640 sec at f/5.6; ISO800
Lens: Canon EF 300mm f/4L IS USM

HOT SHOT #1

Advanced SLR skills

CAVAN'S TIP

The crop factor...

Canon EOS D-SLRs come in three different flavoured sensors – APS-C/1.6x crop factor (eg 450D, 60D and 7D), APS-H/1.3x crop factor (eg 1D Mk IV) and full-frame/no crop factor (eg 5D Mk II and 1Ds Mk III). These crop factors affect sensor size and also effective focal length (EFL). For example, a 18-200mm lens on a 450D has an EFL of 29-320mm. So you lose out on the wide-angle end, but you gain on the telephoto end – which is a bonus for shooting wildlife when you need to get close! "My 450D's 1.6x crop sensor meant I could use a 400mm lens and get an EFL of 640mm, while Ben's pro 1D Mk IV 1.3x crop sensor meant he needed his monster 500mm lens to obtain an EFL 650mm to get equally close to the birds."

BEN'S TIP

Be aware of backgrounds

"I encouraged Cav to try and get some really tightly composed portraits of the birds while wandering around Slimbridge," says Ben. "I always capture a variety of wider and tighter compositions on shoots. The tones and colours of backgrounds behind your bird's heads will make or break these shots, so reposition yourself until you have the best possible background."

EXPERT INSIGHT

Invest in good lenses

Although spending over a grand on a lens (see Killer Kit of the Pros #1) may seem a lot, it's important to remember that your Canon EOS D-SLR is only as good as the lenses you use. "It doesn't matter if you have a 50-megapixel camera – if your lenses aren't the best quality, you won't be able to capture the best quality images," warns Ben. "Better lenses, such as Canon's L-series lenses, have great build quality, wider constant apertures (which mean faster shutter speeds for sharper shots), have faster and more accurate AF, better IS functions, MF override, and will also capture more realistic colours and tones." It's best to see lenses as an investment – and good lenses also hold their prices well on the second-hand market.

▶ Cavan's comment

"It was fun and challenging photographing birds in the air. With my D-SLR set to AI Servo and High-Speed Continuous mode, and a big telephoto lens, I felt like a rear gunner firing at the moving targets! Ben suggested we reduce our shutter speeds to 1/400 sec to capture a little movement in the large wings of the Bewick's swan. With ISO still at 800, this dropped the aperture to f/8, providing more depth of field and a better chance for a sharp shot of the entire bird in flight. I used +1-stop of exposure compensation brighten up the white swan and light sky."

BEN'S TIP

Bird behaviour

Learn to study different birds and watch their behaviour to catch an original shot that reveals the true character of your feathered subjects. "I like to watch birds before I start shooting to see if they're doing anything interesting – preening in the water, balancing on one leg, twisting their head into a unique pose, or perhaps singing – which will help to make a better shot," says Ben.

Ben carries Canon EOS-1D Mk IV and 1D Mk II bodies, plus the following kit in his Lowepro Pro Trekker 300 AW backpack…

Canon EF 17-40mm f/4L USM

Canon EF 100-400mm f/4.5-5.6L IS USM

Canon EF 500mm f/4L IS USM

Canon EF 100mm f/2.8 USM Macro

Canon EF 1.4x Extender
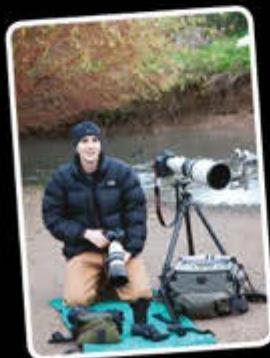
Neoprene camouflage lens covers

Gitzo 3541LS carbon fibre tripod

Manfrotto ball-and-socket head

Benbo Trekker two-leg monopod

Canon angle-finder

Stealth Gear bean bag

HOT SHOT #2

Setting sunlight

Flat light

Exposure: 1/400 sec at f/8; ISO800
Lens: Canon EF 300mm f/4L IS USM

KILLER KIT OF THE PROS #2
Tripod

Big telephoto lenses weigh a ton, and you'll often be sitting around awaiting the right moment for your bird shots, so you'll want a good tripod to take the weight off your arms. "I use a sturdy Gitzo 3541LS carbon fibre tripod and Manfrotto ball-and-socket head – which enables me to support and manoeuvre my big long EF 500mm lens and still track birds in flight," says Ben.

BEN'S TIP

From soft to sharp shots!

Sharp – 1/1000 sec

Soft – 1/100 sec

"Birds are fast-moving, twitchy creatures. You'll need to use a fast shutter speed to freeze their movement and obtain sharp shots – too slow and you'll end up with blurred images. So aim for shutter speeds between 1/500-1/1000 sec," says Ben. "You should also be aware that when shooting in Tv mode, if your shutter speed is slow, your aperture will become narrower (our shot was taken at 1/100 sec at f/11) which will increase depth of field and keep more of your backdrops in focus – which means your birds won't stand out in the scene as well as when using a wider aperture such as f/5.6." ▶

Advanced SLR skills

HOT SHOT #3

▲ Cavan's comment

"I nabbed this shot of a Canada goose while we were walking around the WWT centre. Ben suggested that I kneel to get down to the bird's eye-level and I used a 300mm (EFL of 480mm) lens to fill the frame, while keeping some of the foreground foliage in the shot to give the impression of spying on the bird. I dropped the aperture down to f/4 which, combined with the long focal length, has really knocked the background foliage out of focus to help the goose stand out in the shot. I also used +2/3-stop exposure compensation to brighten up the photo. The little catch-light in the bird's eye really helps this shot!"

KILLER KIT OF THE PROS #3

Canon Extenders

Extenders can affordably increase the reach of Canon EF telephoto prime and zoom lenses. "I use an EF 1.4x Extender on my 500mm f/4 lens to transform it to 700mm – it loses a stop but I can still shoot at f/5.6, wide enough to blur backdrops." The 2x Extender doubles focal length, but you lose two stops. Extenders are only compatible with some lenses, such as the EF 70-200mm f/4L and fixed-length L-series models over 135mm.

CAVAN'S TIP

High-speed continuous drive mode

"My old EOS 450D was struggling to keep up with the fast-moving action so I borrowed *PhotoPlus*'s EOS 7D," says Cavan. His 450D only has a high-speed continuous drive speed of 3.5fps (frames per second), whereas the meatier 7D pumps out 8fps. The difference was instantaneous! "My success rate improved dramatically," laughs Cavan. "The 7D's 19 autofocus points really helped, I also preferred the weight of the 7D in my hands, and it felt better balanced with the telephoto lenses. I want one now!"

KILLER KIT OF THE PROS #4

Double bean bag

Bean bags are great for supporting your big tele lenses if you want something smaller and more mobile than a tripod when you're out shooting birds. They're ideal for draping over fences, walls or car window sills, and for low-level shots when you need to shoot close to the ground and your tripod can't go low enough. "I use the excellent Stealth Gear double bean bag (£35, www.warehouseexpress.com) that has a handy strap for carrying it. I fill it with bird seed in case I need to feed the birds to get them to come closer for a shot!" says Ben.

BEN'S TIP

Watch the birdie!

"When panning and shooting birds in the air, be aware of tall trees or distracting elements in front or behind the birds; these can confuse your autofocus and you'll get sharp backgrounds and blurred birds!" smiles Ben. "I also manually set the central AF point for flying bird shots; it's more sensitive and accurate. You can crop in Photoshop to put the bird off-centre for a better composition later."

EXPERT INSIGHT

Autofocus modes

Your Canon has three main autofocus (AF) modes: One Shot AF for shooting subjects that aren't moving, AI Servo AF for tracking and shooting moving targets and AI Focus AF, which aims to automatically switch been One Shot and AI Servo if your subjects can't make up their mind! "For photographing birds in flight I advised Cavan to switch to AI Servo AF to help him keep up with the birds. In this mode the AF beep doesn't sound when you've achieved focus, so you need to trust your camera.

Use AI Servo with High-speed continuous drive mode (see left) and you'll capture winning shots!" says Ben.

Ben Hall's beautiful bird shots

Top Canon professional photographer Ben shares three of his best bird shots…

Turnstone running

1 "To capture fast moving subjects, I use predictive autofocus on my 1D Mark IV and pan smoothly firing a burst of shots at a time. This turnstone was sprinting up and down the shoreline on a remote Lincolnshire beach, so I lay on the ground using a beanbag for support. The low angle gave a more intimate viewpoint and helped create a diffused background."

Whooper swan

2 "I love shooting wildlife in adverse weather. For this whooper swan portrait taken at Martin Mere WWT reserve, I went in tight using the graceful neck to lead the eye through the image. To ensure the snow didn't make my D-SLR underexpose, I set an exposure compensation of +1 1/3 stop. This helped to keep the tones high-key, giving the shot an almost ethereal look."

Red grouse

3 "I photographed this beautiful red grouse on a Peak District moor just as the sun was beginning to set. The warm hues at this time of day are perfect for bringing out the rich colours and texture of the bird's plumage. I went for a low angle in order to diffuse the foreground and background and used a large aperture to help the subject to really 'pop'." ▶

Exposure: 1/800 sec at f/4; ISO800
Lens: EF 300mm f/4L IS USM

SHOT OF THE DAY

Ben's verdict

"Cavan's got a winning action shot of a snow goose here. By getting down low, he's minimised empty foreground [1] and achieved a strong composition with a dark background of the riverbank [2], helping the bird stand out. He's done very well to get a shot with the head still and sharp [3], and his fast shutter speed has frozen the bird mid-wash while all-importantly capturing the movement of the wings [4]."

Cavan's comment

"Lying on my front to get down to water level, I'd been watching this snow goose wash and preen itself, and fired off a series of shots when it turned to look down my long lens. I could then pick the best image, and felt the movement and position of the wings was the strongest in this picture. The 1/800 sec shutter speed was fast enough to capture the bird's head sharply and to freeze the water splashes in time." ■

LEARN HOW TO PHOTOGRAPH...

Trailblazing motor sports

Our apprentice discovers how to capture flying motocross riders and other drama-packed shots as she spends the day with pro motorsports photographer Adam Duckworth

THE APPRENTICE...

Name: **Emma Holmon**
Camera: **Canon EOS 450D**

Emma, from Teignmouth in Devon, is 37 years old, and is a registered manager of an autism service. She's been into photography since she bought her first D-SLR, a Canon EOS 450D, four years ago. Emma's partner is a keen motocross rider, and she wants to be able to capture better action shots of him as he races past. ▶

THE PRO...

Name: **Adam Duckworth**
Cameras: **Canon EOS 5D Mk II and 7D**

44-year-old Adam is a successful motorsports photographer. He's been professional since 1987, and since 2007 he's focused on motocross. Adam is editorial director and chief photographer for *Moto* magazine (www. motomagazine.co.uk), and the author of two photography books, *One Light Flash*, and *The Flash Photography Field Guide*.

Advanced SLR skills

KILLER KIT OF THE PROS #1
Canon Speedlite 580EX II flashguns

Adam is a big advocate of using flash lighting to enhance his motocross shots. "The pop-up flash on most EOS cameras is fine for basic shots, but your photos will look so much better if you use an off-camera flashgun," he says. "It means you can control the direction of light, for example by using side-lighting to add depth to shots by creating shadows. You can get good results with just one flashgun, but I use two or three flashguns on stands, fired with my Pocket Wizard wireless triggers."

Getting Emma's skills up to speed

After Emma had taken a few test shots of our MX rider and his bike, Adam had a few suggestions to help improve her technique

Switch to manual

"In the past I've kept my camera on the Sports auto shooting mode, however Adam showed me that by using the manual mode I have much more control over my photos," says Emma. "I learned how to expose the scene correctly by using the histogram on my LCD, checking for blinking highlights on each shot to make sure they weren't blown out."

Shoot Raw instead of JPEG

"Usually I only shoot JPEGs," says Emma, "but Adam explained that by switching to Raw I'd have more scope to tweak my images at the editing stage. At first I was shooting both, using the JPEG+Raw setting, but I found my 450D couldn't keep up with the pace of shooting in the high-speed Continuous mode. When I switched to Raw only, my camera performed much quicker and I was able to capture the moment."

HOT SHOT #1

Exposure: 1/200 sec at f/13; ISO200
Lens: Canon EF-S 18-55mm f/3.5-5.6 IS

▲ Emma's comment

"Before we started shooting the action, Adam suggested we get some cool portraits of our MX rider Dave next to his freshly-cleaned bike. On the day of our shoot the lighting was very grey and flat, so Adam helped me set up the flash lights, and we used an umbrella to diffuse the light on Dave. I shot in Manual mode, 1/200 sec at f/13 for a dramatic sky, and used ISO200 so the flash light was powerful enough to illuminate the bike. I was shooting knelt down, but Adam got me to focus, then drop my camera right to ground and press the shutter button to get a more dynamic shot, looking up. I can't believe I took this shot!"

WITH FLASH

NO FLASH

ADAM'S TIP

Light up your photos!

"Before we shot our MX rider Dave on his bike on the track, I told Emma it would be good to get some snaps of his bike while it was still spotless and gleaming," says Adam. "We first took shots with wide-angle lenses and no flash, but the sky was boring, so I set up two flashguns on stands and lit the bike instead, while underexposing the dull sky by three-and-a-half stops (from f/4 to f/13) for a more moody, professional look."

KILLER KIT OF THE PROS #2

Pocket Wizard triggers

To fire his flashguns remotely, Adam uses three sets of Pocket Wizard Flex TT5 triggers (£179 each), fired by a Pocket Wizard Mini TT1 trigger (£169) on his camera's hotshoe, along with an AC3 Zone Controller (£60). "They're expensive, but they're the best triggers out there – they're reliable and enable me to fire multiple flashes from a distance," says Adam. Less-expensive triggers are available, from makers such as Hahnel. ▶

Advanced SLR skills

KILLER KIT OF THE PROS #3

Telephoto zoom lens

As you can get close to the track for motocross, if you're using an EOS with a 1.6x crop sensor (like Emma's 450D and Adam's 7D), a 70-200mm lens should be long enough, as the effective focal length at 200mm is 320mm. Adam says: "I love my Canon EF 70-200mm f/2.8L IS II lens – it's fast and responsive to focus, the wide f/2.8 maximum aperture is consistent from 70mm to 200mm, and it delivers great background blur when used wide open." Adam's lens costs around £1,800, while Emma's EF 70-200mm f/4L IS is more affordable at around £935.

ADAM'S TIP

Background matters

Adam says the background of his shots is just as crucial as the foreground action. "At all costs avoid tyre walls, banners and ugly distractions," he says. "Although you'll be shooting at a rapid pace, familiarise yourself with the track before the action begins, and reposition yourself and zoom in to avoid ruining your images with background clutter. Also use single AF points to track the rider, but be careful not to focus on backgrounds!"

HOT SHOT #2

Exposure: 1/800 sec at f/4; ISO800
Lens: Canon EF 70-200mm f/4L IS USM

◀ Emma's comment

"Dave was a fast mover, so I had to be prepared before he whizzed round the corners. Adam showed me that by turning off the Auto AF Point Selection setting which I'm used to using, and selecting the centre AF points instead, I could snap pin-sharp shots. The disadvantage with single AF points is you have to be careful not to lock the focus on the background, which I did a couple of times! I also changed the AF drive to AI Servo mode; Adam explained that this is the most effective setting for moving subjects."

HOT SHOT #3

Exposure: 1/500 sec at f/4; ISO800
Lens: Canon EF 70-200mm f/4L IS USM

In his kit bag Adam carries a full-frame Canon EOS 5D Mk II and fast Canon EOS 7D, with a wide variety of lenses and kit:

Canon EF 24mm f/1.4 II USM
Canon EF 24-70mm f/2.8L USM
Canon EF 24-105mm f/4L IS USM
Canon EF 70-200mm f/2.8L IS II USM
Canon EF 17-40mm f/4L USM
Canon EF 50mm f/1.4 USM
Canon EF 85mm f/1.2L II USM
Canon EF 300mm f/2.8L IS II USM
3x Canon Speedlite 580EX II flashes
Pocket Wizard Flex TT5 triggers
3x Manfrotto Nano stands

▲ Emma's comment

"Adam said my Canon D-SLR needs to be just as fast as the rider, so I need to think carefully about what settings I used. You want to keep your shutter at around 1/500-1/800 sec and open the aperture wide – to f/5.6 or even f/4 depending on what your lens is capable of. Adam said I'd also need to push the ISO up to achieve the fast shutter speed. Keep ISO as low as you can, but be prepared to go as high as ISO800 in dull daylight conditions like we had."

ADAM'S TIP

Peak timing

"To ensure you capture the peak of the action, press the shutter at the start of a turn or jump and keep shooting on burst mode through to the end. At the editing stage look for angles, dynamic body positions and subject movement that capture the optimum moment." ▶

Advanced SLR skills

Find a good venue

"Which track you visit will make a difference to your shots. We set up a private day at Arncott Moto Parc (www. arncottmotoparc.com) near Oxford. It's a good track to shoot at all year round thanks to its all-weather surface, and the spray of woodchips that's thrown up when riders power out of corners really brings shots to life. The track is open on Wednesdays and Sundays to all riders and photographers."

Turn off Image Stabilisation

"Adam suggested I turn off the image stabilisation setting on my Canon telephoto lens. This may sound like a contradictory tip, however it will increase the speed of the autofocus on your lens, and as you'll be shooting at fast shutter speeds you won't need it."

Adam's action-packed portfolio

Our pro talks us through three of his favourite motorcross images

Action sequence

2 "This jump sees riders glide right over you! I used a 17mm wide-angle lens at f/6.3 for this sequence, and a shutter speed of 1/1000 sec to freeze the rider, then combined the images in Photoshop."

Flying into focus

3 "The AF point on my camera was set to the top third of the grid, and left slightly, to pick up on the rider's helmet. As the rider suddenly appeared in mid-air from behind the jump I had to quickly get the AF point locked on him and fire off a frame."

Down and dirty

1 "The late evening sun really highlighted the sand the rider was kicking up in this shot. I chose an aperture of f/4 to keep the whole of the bike sharp while blurring the less-interesting parts of the background."

HOT SHOT #4

Exposure: 1/200 sec at f/9; ISO200
Lens: Canon EF 70-200mm f/4L IS USM

▲ Emma's comment

"I learned that you need to assess the lighting conditions, and adapt your camera settings and lighting equipment to fit the surroundings. Adam showed me that an external flash gun can be useful whatever the weather, as it will brighten the subject matter in dark conditions, and will fill in harsh shadows on a sunny day. We were using three external flash guns on lighting stands, and at first I felt a little daunted at the prospect of using them. I soon realised that they weren't as difficult to control as I'd thought, and Adam set them to fire on the Auto TTL setting. Adam also advised me to check with course officials before I used flash, as it can be distracting to the riders."

OUR PRO MX RIDER

Our motocross rider for the day was two-times 2-stroke British Motocross Champion Dave Willet. Dave, 32, is also a chief test rider for Moto magazine and other major motocross brands.

ADAM'S TIP

Panning for perfection

"To start, set your shutter speed to around 1/160 sec (shoot in Tv mode) to hone your panning technique. Position your feet shoulder-width apart, and swivel smoothly with the subject in your viewfinder as they pass by. Then, when you're getting consistently sharp shots of your subject, start to decrease the shutter speed one stop at a time to blur the background behind the subject and create a sense of speed; a speed of 1/60 sec produces good motion blur in the background while keeping the subject sharp." ▶

MASTER YOUR CANON

CANON WORKSHOP

ESSENTIAL SLR SKILLS

ADVANCED SLR SKILLS

Advanced SLR skills

SHOT OF THE DAY

Adam's verdict

"This shot has it all! The background is nicely blurred [1] so as not to distract from the rider, and the fast shutter speed has frozen the action perfectly [2]. Emma got the exposure just right, so the highlights haven't blown out [3]. She also caught the angled form of the rider and bike [4] to show the movement of the front wheel shooting out of the corner."
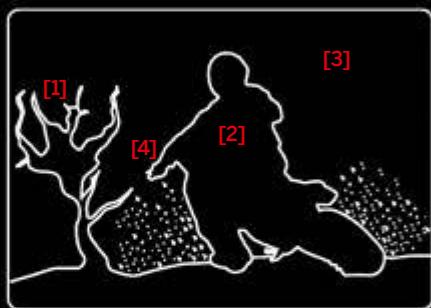
Emma's comment

"I managed to capture this dynamic moment by setting my camera to Continuous shooting mode. The effect of the mud spraying up from the tyres, and the angle of the rider and his bike as he powers through the corner are really exciting. I can't believe I took such a great shot, and can't wait to try out my newly acquired action photo skills soon!" ■

THE PRO...

Name: **Michael Bosanko**
Camera: **Canon EOS 5D Mk II**
Michael, 43, was born and bred in Caerphilly, south Wales. An amateur photographer since the mid-'90s, he turned professional in 2001. But it was in Greece one night in 2004 that he discovered light painting by moving his camera during a long exposure to write with the moon as his ink! Nowadays his Canon D-SLR stays still and he paints using torchlight – along with a wide variety of gadgets and gizmos. See his mind-blowing portfolio at www.michaelbosanko.com.

THE APPRENTICE...

Name: **Duncan Green**
Camera: **Canon EOS 450D**
Duncan, a 54-year-old contract sales manager from Stockport, has been a keen amateur Canon photographer for the past two years. He currently uses a 450D, but has his eye on upgrading to the newer, bigger 70D! He asked for our help to improve his night photography and to show how to paint with light – his wish was our command... ▶

LEARN HOW TO PHOTOGRAPH...

Blazing light trails at night

Discover how to paint with light as our lucky apprentice learns the dark arts on the shores of Cardiff with light-painting artist Michael Bosanko WORDS PETER TRAVERS LOCATION PICTURES JAMES CHEADLE

Advanced SLR skills

KILLER KIT OF THE PROS #1
Sturdy tripod

"A tripod is vital for night photography – the sturdier the better!" says Michael. "You'll need it to keep your camera perfectly still during your long exposures to ensure sharp shots. It also acts as a reliable assistant and focal point when light painting. I use Manfrotto 055XCPR4 tripod legs with a 804RC2 three-way head. As it's carbon it's nice and light – ideal when I'm trekking into the Welsh wilderness at night!"

Is Duncan ready to shoot at night?

Our apprentice saw the light when Michael showed him key setup tips for taking photos at night

Bulb mode

"To control the length of your exposures for your night photos you'll need to use the Bulb mode, as often shots will be longer than the maximum 30 secs available in Manual and Tv (Shutter Priority) mode. My Canon 5D Mk II D-SLR has a 'B' setting on the Exposure Mode dial, but on Duncan's 450D, we had to use Manual mode then set the shutter speed 'beyond' 30 secs to get to Bulb. Press your remote release to open the shutter, and again to close it," says Michael.

Aperture settings

"Although we have full control over shutter speed, we still need to set the aperture when using Bulb mode. Experimentation – and experience – is the key to finding the best exposure at night," says Michael, "For instance, in the early evening if there's still a little light in the sky but not much ambient light around, I know that an aperture of f/5.6, and shooting between approximately 30-90 secs, will give good results. I'll use a narrower aperture of around f/11 if shooting in cities with some streetlights and ambient light. I always keep my ISO at 100."

EXPERT INSIGHT

Boost your night shots in Photoshop

Cool down the Raw image to a Temperature of around 2500 to enhance the blues in the light streams. In Photoshop, boost the contrast and by duplicating the 'Background' layer and using the Soft Light blending mode. Also clean up the shot from distractions by using the Spot Healing Brush tool. Finally, sharpening also brings out the edge of the lights.

KILLER KIT OF THE PROS #2
Remote release

"A remote release is absolutely essential for night photography to avoid nudging our camera as we take the shot, which could result in a blurred image. As we'll be using Bulb mode (see left), this means pressing the shutter button both at the beginning and end of the exposure, so the trick of using the self-timer instead won't work!" says Michael.

▼ Duncan's comment

"Michael showed me that you can actually create your own light trails by attaching a battery-powered string of LED lights to a hula hoop! He started with the hoop around the lens, then ran away from the camera. For this shot he twisted the hoop as he ran to get the vortex-like effect. The exposure was only 13 secs as I stopped once he was out of sight. I was amazed how effective it was, and it's more interesting than the standard blurred traffic light trails you often see." ▶

HOT SHOT #1

Exposure: 13 secs at f/16; ISO200
Lens: Canon EF-S 17-85mm f/4-5.6 IS USM

KILLER KIT OF THE PROS #3

LEDs & hula hoop!

"I use all sorts of homemade devices for light painting," says Michael. "For our vortex light trail we simply attached a string of battery-powered LED fairy lights (£3, IKEA) to a hula hoop (£8, Toys R Us), but you can attach them to all sorts of different shapes. It's a great way to advance your light painting."

A shot in the dark

"I'm often asked how do I focus when shooting in pitch black in the middle of nowhere. It's simple – I shine a torch on the ground where I'll be standing when light painting. Then, using Live View, I zoom in at 10x magnification to that spot and manually focus with my lens until it's sharp. So Live View and manual focus (MF on your lens) is the key – avoid autofocus!" smiles Michael.

EXPERT INSIGHT

Merging layers of different lights

To bring out the cooler blues of the LEDs on the spinning hula-hoop, we processed the Raw image twice in Adobe Camera Raw: once at a Temperature of 3950 to make the most of the background building and lights, then at 2400 for the sphere. In Photoshop, paste the warmer image as a layer on top of the cooler one, add a mask, then using a black brush, paint over the sphere to reveal the cooler version underneath.

2400 K

3950 K

MICHAEL'S TIP

White balance settings

When shooting in or near cities at night you may find your photos have a warm, orange colour cast, thanks to the ambient light. Michael says, "I manually set White Balance to Tungsten to keep the colour temperature down and the colours cooler and bluer." If you shoot in Raw – and we suggest you do for the best results – you can tweak the colour temperature post-shoot in a flash to get it just right. See Expert Insight, left.

KILLER KIT OF THE PROS #4
Wide-angle lens

"With my full-frame EOS 5D Mk II – which gives brilliant image quality, even at night – I'll generally use my Canon EF 16-35mm f/2.8L II USM wide-angle lens. It's great quality and more than wide enough for the majority of night shot setups. It will also exaggerate painted shapes, without becoming distorted," says Michael. For Duncan's EOS 450D, with its 1.6x crop factor, he'd need a 10-20mm ultra-wide angle lens to get the same angle of view as Michael.

▼ Duncan's comment

"I'd always wondered how people like Michael created those light orbs I've seen in shots. He explained that he uses a bicycle wheel and LEDs for some of them, but we can also simply spin our hula hoop with its LEDs. Which is what we did for this shot to add something unique and to add some movement to the scene, with Cardiff Bay's Pierhead Building and the coloured lit columns as a backdrop. A long exposure of 20 secs at f/11 was used to capture detail in the scene, as well allowing enough time for Michael to spin the hoop." ▶

HOT SHOT #2

Exposure: 20 secs at f/11; ISO100
Lens: Canon EF-S 17-85mm f/4-5.6 IS USM

Advanced SLR skills

Keep the noise down

"Although we're shooting at ISO100, noise will creep into shots during long exposures, and especially at night in dark skies. You can reduce this by going to your Canon D-SLR's menu under 'Long exp. Noise reduction' – on my 5D Mk II it's in Custom Functions. It works by taking two shots, your long exposure, and another 'dark frame', then combines them in-camera for a noise-free image," says Michael. "Bear in mind that a 60 secs exposure will then take 120 secs for both shots, and that you can't shoot while your camera processes the two shots."

KILLER KIT OF THE PROS #5
Steel wool setup

"For our fiery spinning sparks we used my homemade steel wool cage and chain. The cage part is just thick wire bent into shape with pliers, then attached to the chain. I have a cage on each end of the chain I use, but one cage is enough. Stuff some fine-gauge steel wool inside, then tease it apart so it's easier to light. Use a lighter to set it on fire, then swing away... carefully!" warns Michael. All these items are available from hardware stores.

KILLER KIT OF THE PROS #6
Torches of every kind!

Michael's camera bag contains more lights than Oxford Street at Christmas! "I carry all manner of lights, from powerful torches to neon strip lights to a car inspection lamp," smiles Michael. "Different colour gels are also handy to change colours. I improvise a lot and find my homemade Heath Robinson contraptions often produce the best results when light painting. I also carry spare batteries for everything too!"

HOT SHOT #3

Exposure: 35 secs at f/5.6; ISO100
Lens: Canon EF 16-35mm f/2.8L II USM

▲ Duncan's comment

"This light painting effect had always fascinated me. Michael explained it's achieved using steel wool in a tiny homemade metal cage at the end of a chain; the wool is set alight and carefully swung around in a circle. We shot this at the water's edge near Cardiff Bay, as *PhotoPlus* editor Peter gamely swung the chain! At the time it doesn't look like much – just a few sparks here and there – but the results speak for themselves. In Bulb mode I used an exposure of 35 secs – which was until the wool had gone out. A wide aperture of f/5.6 has caught a little of the light left in the sky, while using a wide-angle lens has made sure there was enough depth of field."

SAFETY FIRST

Use common sense when using fire. For our steel wool shots we kept the length of chain well away from our bodies. You only need to light a bit of wool before swinging it. Avoid crowded spots or places with flammable material! Next to the water's edge is ideal – as you can simply lower the chain into the water to cool it down once you've got the shot.

Lights... camera... action!

A small selection of Michael's most eye-catching light painting images...

Marbles

1 "I created this image in near-pitch-black conditions. As I would be filling a road with so much light, I shot at a little-used and safe back road in the Brecon Beacons. The light setup is created with different-coloured LEDs around hula hoops, which were then spun."

DIY traffic light trails

2 "The Brecon Beacons is one of my favourite areas for light painting. In this image, I attached various lights to a vehicle that I drove down an abandoned track for a quarter of a mile, with my camera positioned at the side of the track on a tripod."

Dragon

1 "One of the most appealing attributes of light painting is the way light interacts with the environment. Surfaces become reflective after rain, and puddles are a superb enhancement. If droplets hit the lens, don't be too quick to wipe them off; they give wonderful flare effects."

The Rust Bus

2 "Viewers will get a sense of scale if you use recognisable objects in your composition. In dark areas, you can work your magic for long periods of time. This VW Kombi took over 17 minutes to paint, using a plethora of tools, from torches to homemade LED rigs." ▶

SHOT OF THE DAY

MICHAEL'S TIP

Flowers by torchlight

"After firing the shutter with your remote control, turn your torch on and start your flowery light painting by drawing two petals out from the same point by your feet," says Michael. "Turn the torch off between each stroke to avoid messy lines. Draw a line up for the stalk up to a point, so when standing your torch is facing your lens, then use the lens as the centre point to draw out the petals. For the best results use different coloured torches for each part of the flower."

Michael's verdict

"Duncan was an enthusiastic apprentice and got some great shots on the night, including this deserved Shot Of The Day. Although he made a valiant attempt of painting a flower, we decided I'd paint and he'd shoot for the best outcome! [1]. He prefocused accurately on the spot where I was painting the flower for a sharp shot. A large aperture of f/5.6 has let in more light to capture colour and detail in the night sky and the ambient light across the bay [2]. The 92 second exposure time was how long it took for me to paint the flower – this has also blurred the movement nicely in the clouds [3] and strip of water behind."

[1]   [2]   [3]
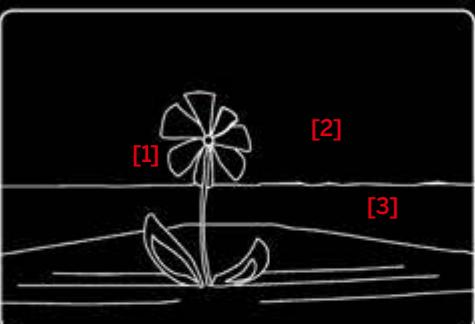
Duncan's comment

"This was by far the best setup of the night to shoot, especially because when Michael was painting the flower, you don't have any idea how it will come out in camera until the long exposure finishes. For this flower he used various coloured torches, and different coloured LED strip lights for the petals and leaves. The reveal was simply stunning, Michael is a true artist, right down to utilising the seaweed to act as the 'grass'. It was my longest exposure of the night, at over 90 seconds." ■

Exposures: 92 secs at f/5.6; ISO100
Lens: Canon EF 16-35mm f/2.8L II USM